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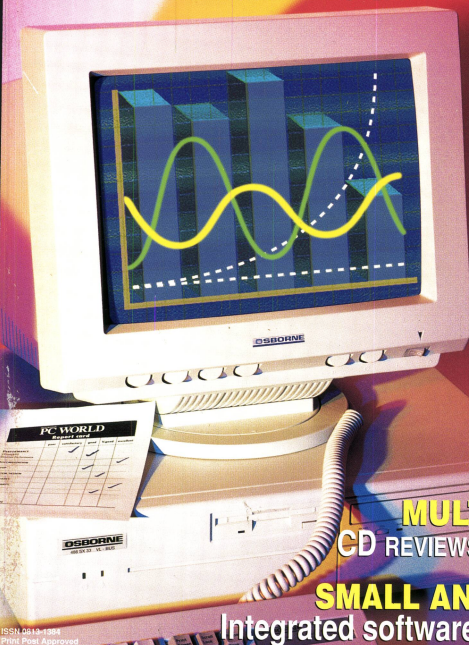
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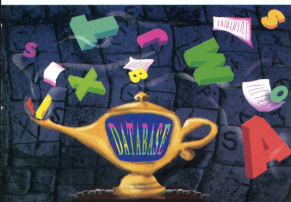


Dealing with some PC companies can be difficult, especially if the PC you buy goes wrong. You ring the dealer, he tells you to call the PC company, they tell you it's the dealer's responsibility . . . HELP!

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Dell's PCs are designed, manufactured, sold and supported direct by Dell. Service is only a phone call away. The buck stops here. Our motto is : WE HELP.



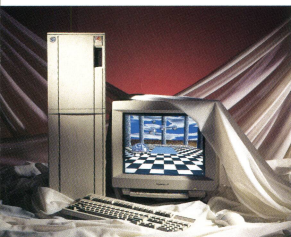
Windows databases vary in complexity and design. We look at the range available to suit most users' needs
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Win a DECpc XL

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Enter the All-Time PC World Awards and you could win a DECpc XL 566 Pentium-based system valued at over \$12,000

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If you're in the market for a 486SX, why not consider a clone. The Test Centre finds they're cheaper than most name brands, are upgradable, and have all the performance you need

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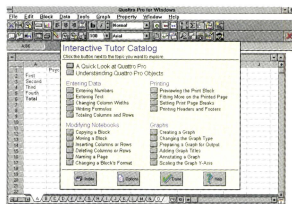
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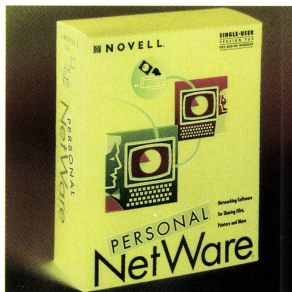
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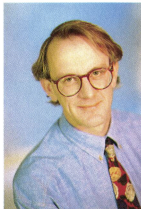
Quattro Pro for Windows is one of the spreadsheets we look at to help you determine which best suits your needs. *Product comparison, page 116*



Personal NetWare is not especially user friendly, but it's fast, has a Simple Network Management Protocol agent and is compatible with Novell's NetWare Management System. *First Look, page 66*

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- Modems
- Communications software
- PC upgrades
- SOHO PC: Multimedia PCs



Clones still out-running name brands

Once again, a clone PC (the locally assembled Microarts), has out-performed some of the better known brand names in our Test Centre product comparison. This is not the first time this has happened, and again, the fastest performing machine has acted as a pioneer in introducing a new technology to the Australian market.

In our April 1993 issue, the performance winner was a 486SX complete with VESA local bus configuration. The VESA bus gave it an edge over its competitors, especially in terms of Windows video performance. Now the VESA bus is commonplace, although it appeared to come out of the blue when it first arrived.

This year, it is the PCI bus that seems to be providing the winner with a performance boost. It's interesting to note that although there are two PCs included in our tests with PCI slots, neither of them are name brands.

The PCI specification has been slow in coming to the desktop but it offers more flexibility than the current VESA configuration.

As we found twelve months ago, you can buy a better performing clone PC at a bargain price. Last year, the cheapest clone was half the price of the most expensive name brand. This year, prices have levelled a bit, but you can still buy two clone 486SXs for the price of one Compaq DeskPro or one AST Premmia.

Home users

A recent survey shows us that a very high percentage of *PC World* readers use a PC at home, for running a business, for taking work home, or just for the fun of it.

This is encouraging evidence that the SOHO (small office, home office) segment of the PC market is active and growing. Among the topics inside SOHO PC this month, you can read about integrated software suites, and what to look for when shopping for a PC and software to use at home.



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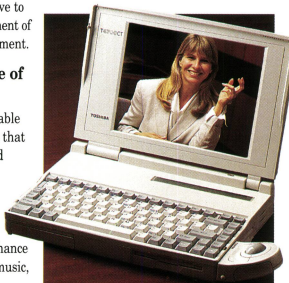
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*Credit card-sized industry-standard Personal Computer Memory Card International Association. i486 is a trademark of the Intel Corporation. Toshiba (Australia) Pty. Limited. ACN 001 329 421. The screen illustration is a simulated reproduction.

Computer companies contest cut-price market



By Beverley Head

In 1990 a top brand 386 personal computer cost upwards of \$3,500.

Now the street price for a top brand 486 complete with 4Mb of RAM, 170Mb of hard disk, operating software, mouse, monitor, keyboard and an applications suite is about \$1,000 cheaper. Lesser known brands sell for even less.

During the intervening years a seminal event took place in the upper echelons of the PC industry; companies recognised they were operating in what was essentially a white goods economy — subsequently they discovered the need for re-engineering.

Amstrad first equated selling PCs with selling washing machines and everyone guffawed.

Then Amstrad started gathering market share. The top brands' share began to be eroded by no-name products imported from overseas, or by local brands. The guffawing stopped.

Amstrad was correct about PCs representing a white goods consumer market; it was wrong about some of its products which is why it is today a fringe dweller. In Contrast Compaq Computer Corp has always had good products but charged top whack prices.

Fact was the yuppies from Houston needed to learn a lesson from the East End barrow boys. Computer companies themselves needed to do the re-engineering they were preaching for their customers.

That hit home when Compaq fell victim to the prestige product selling cycle in 1990 when sales fell for the

first time — by 9.2 per cent to \$US3.27 billion — while profits plummeted 71.2 per cent to \$US130.9 million. The miracle cure for this corporate Lazarus was a decision to shift from a premium price strategy to a knock 'em down and sell 'em quick approach.

In 1993, despite PC prices being much lower and customers demanding more bang for their buck, Compaq more than doubled its profits to \$US462 million with sales up 75 per cent to \$US7.2 billion.

It's a lesson which most of the other top brand PC companies have had to learn — and so far the customer is the winner.

To keep its economic model alive Compaq needs to sell between 3.5 million and 4.5 million personal computers every year.

Last year it shifted around 3 million boxes which gave it control of around 8.4 per cent of the global market — or third ranking behind IBM and Apple.

To rise any further it has to keep the gloves on, knocking down pricing wherever it can and slashing back costs without decimating development. Corporate executives have already said they want second slot this year, knocking back Apple.

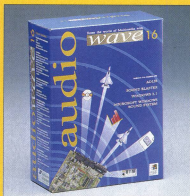
But to make the model work effectively it has to carefully match supply with demand.

When it first cut prices many Australian customers couldn't buy Compaqs even if they wanted to. Disillusioned they went elsewhere. It's the sort of marketing hiccup Compaq cannot afford. ▶

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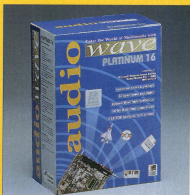
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The only constant is change

In 1992 Compaq's Australian revenues reached \$137 million, up 41 per cent, while volumes rose 101 per cent. It would have sold more had it not had supply problems.

Last year Compaq Australia claimed that it sold \$210 million worth of personal computers — up 53 per cent on 1992. Volumes, though, rose only 73 per cent during the year as it began to claw back margins.

Those margins are critical to allow Compaq to continue research and development and diversify with

more servers, desktops, notebooks, subnotebooks, and the shortly to be introduced personal digital assistant line.

Beside having the new products at the right price, Compaq has to have an effective and efficient distribution strategy.

So far in Australia the company has concentrated on distributors and retail outlets to expand its customer interface while keeping costs down.

It has so far avoided direct sales locally, although its parent in the US is dabbling in the area, taking on arch

rival Dell. Current pricing trends seem to vindicate that decision in Australia which appears to suffer from phone-order phobia.

Harvey Norman, which runs a personal computer superstore in Sydney's west, is offering a Compaq computer configuration suitable for the average small business user that costs \$2,699. Dell's over the phone prices are within \$100.

Right now Compaq's business model is working in Australia and overseas.

If it is to continue thus the company — along with the rest of the PC industry — needs to tattoo the cardinal rule of re-engineering into its charter: the only constant is change.

•Beverly Head is the information technology editor of the Australian Financial Review

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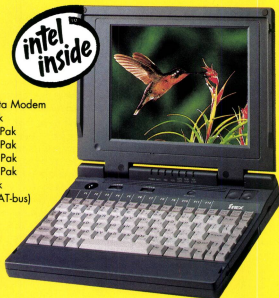
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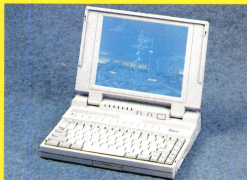
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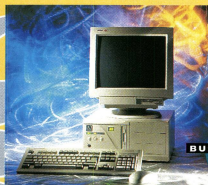
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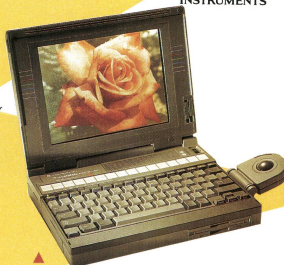
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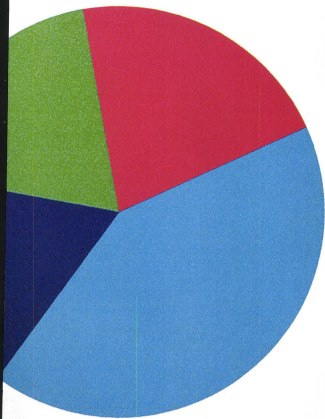


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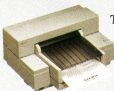


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Australian information technology — do it now!



By Doug Rutan

During the past few weeks I have been working with four small Australian IT companies looking at launching or expanding new products or services into our domestic market. At the same time I have had discussions with a few business and government representatives who would be potential customers or suppliers to these organisations.

It's important to acknowledge that four do not make a valid sample statistically; however it has been very interesting to note that the type of problems they each face are very similar. Furthermore these problems are certainly solvable and perhaps will give those interested in fostering Australian IT organisations or those of you who have "that great idea" some food for thought.

The first point is that most of these new start-ups seem to set themselves unrealistically high expectations. Everyone still wants to be the next Microsoft.

Even the people I have spoken to who are looking to finance or service these new ventures seem to be of the mind set that unless local developers can produce another Lotus 1-2-3 or WordPerfect, Australian software development has somehow failed. Our local market is roughly 3 per cent of the US market so our goal should be to make it here first and then review the next step.

Some good news is that Australia is acknowledged to be one of the toughest IT markets in the world, so success at home will be a true indicator. Also, because we are a small developer in worldwide terms, we shouldn't ignore specific geographical market segments which

offer good opportunities before tackling the huge US market. We can practise in New Zealand with quick follow-ons to Asia, Canada and UK. Another option for us is to license our technology for inclusion in other products.

That leads me to the next issue which is to treat marketing and sales as key elements of product development. Even in 1994 the question of how we should sell our product and to whom for what price is something that is invariably left till last. How many times have you seen inferior products and services outsell functionally superior versions? We live in a competitive market, we have the sales skills and know what has to be done, but as IT developers we still seem to do our market research the hard way and pay the price.

The next challenge for the start-up is that whilst we can produce world-class products, to date there has not been a single organisation developers can go to get their software or hardware invention to market quickly — much like an author goes to a publisher.

Recently Microsoft and WordPerfect announced that they are now in the software publishing business and are actively looking for developers to feed the new SOHO market; however initially this will have a definite focus on the US domestic market. Therefore I feel there is a real opportunity for a local organisation to break through here to concentrate on servicing local software and hardware needs. Currently these services exist but they are spread out over several organisations, each of these

Continued page 22

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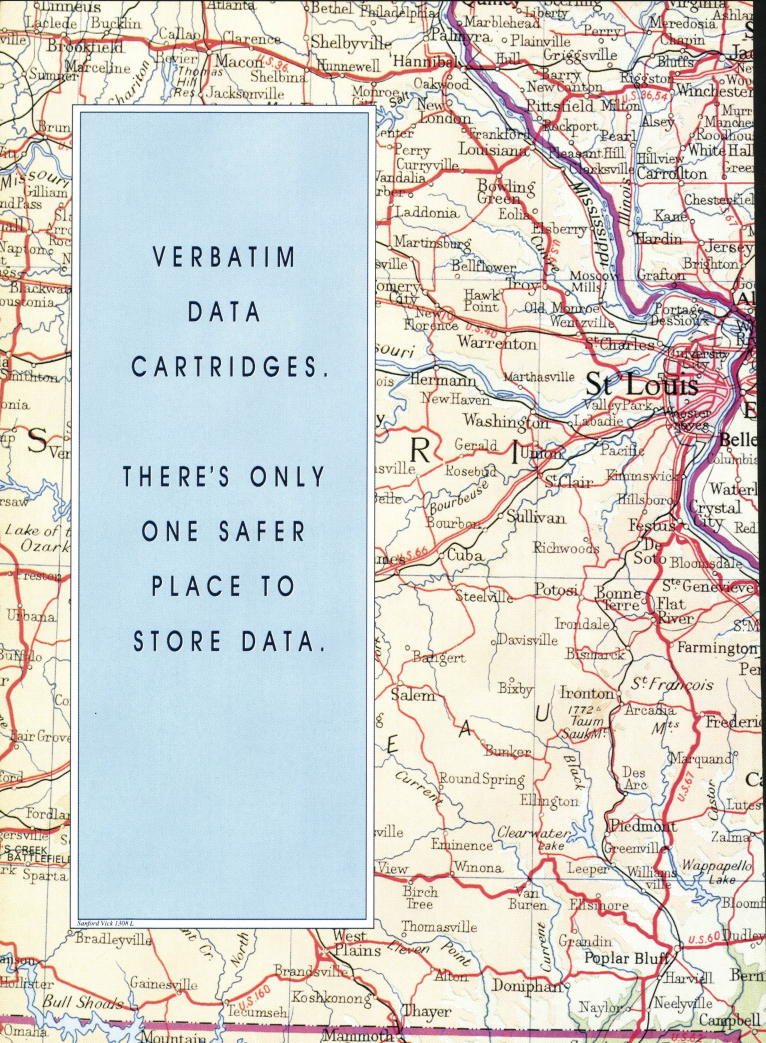
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Customers short-changed by bad documentation



By Ed Foster

I knew that bad documentation was a problem; I just didn't realise how big.

I've received a lot of feedback on documentation problems experienced by readers. The problems they related were all over the map: README files that were more out-of-date than the manual they came with; dip switch settings that worked for a competitor's product but not on the product the manual purported to describe; and translations that might as well have been left in the original Japanese or Korean.

The types of vendors who were accused of shoddy documentation were all over the map as well. No-name clone vendors and small peripheral manufacturers seem to be the biggest offenders, probably because some of them don't expect to be doing business under the same name very long anyway.

But the problem goes much deeper than the fly-by-night vendors. Technical documentation professionals confirmed that they've experienced many difficulties. Even the best technical editors working for companies with good intentions face some real challenges in producing quality documentation. In a business where there really is no such thing as a finished product, the manual is almost always out-of-date as it's being printed. Engineers have a natural tendency to treat documentation as an afterthought and often fail to communicate all the relevant information that users need to know.

And, of course, the temptation to cut corners on documentation is not just felt at the smaller companies. Many of the documentation professionals had stories to tell: documentation goes to the printer without a technical expert checking for accuracy. Old manuals get recycled with

little more than a search-and-replace on the name of the product. The OEM vendor's manual is simply given a new cover, even though the vendor makes significant changes to the product.

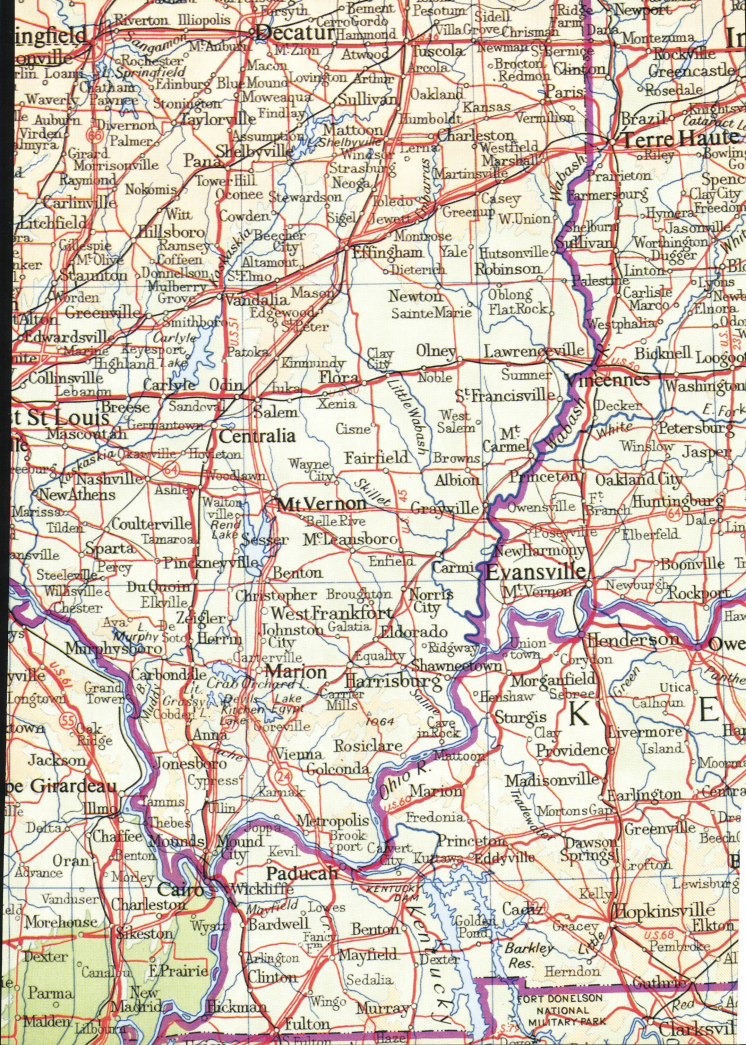
After listening to these stories, though, I suspect that technical support and documentation move down the priority list in step, because a company that skimps on one is likely to skimp on both. And that's bad, because bad documentation increases your need for good technical support.

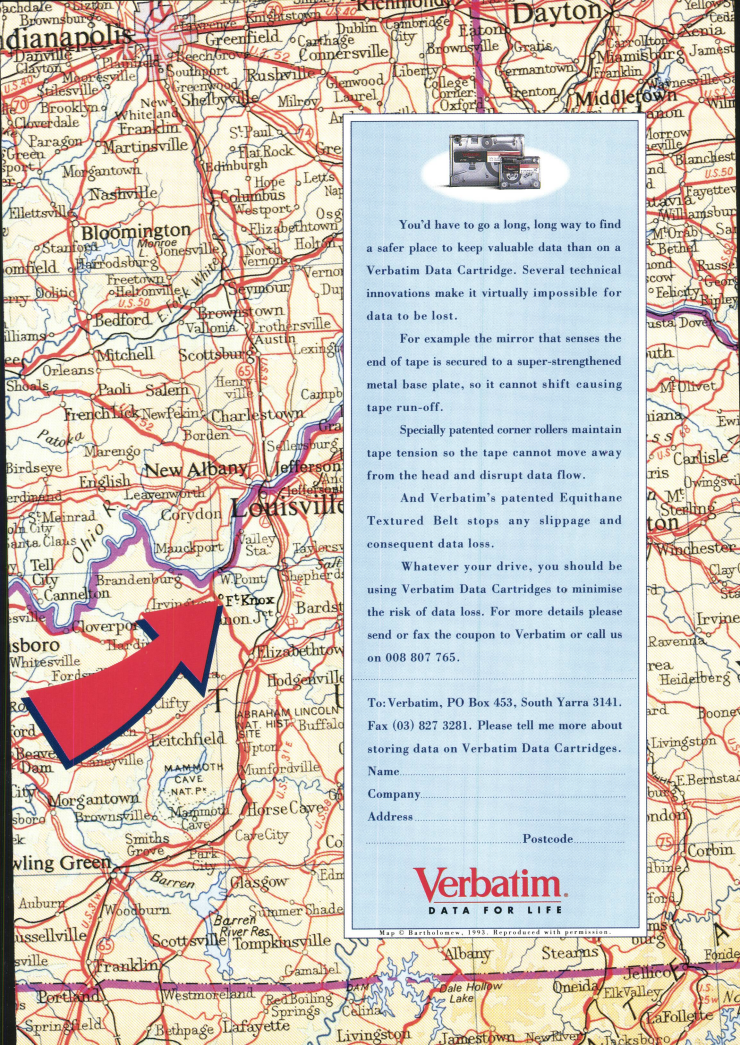
And that leads us into another dicey issue. As several readers pointed out, the trend towards paid support has all sorts of implications when it comes to documentation. "What's going to be the incentive to make good manuals?" asked one. "How often are they just going to decide to leave something out of the manual so they can make some money off the poor suckers who have to call?"

Too cynical a view? Yes, in a way. I certainly doubt that many companies will intentionally cripple their documentation to make more money off paid support. But they don't have to do it on purpose — most of them are already producing manuals that aren't as good as they should be.

As the industry rushes headlong towards paid support, vendors might want to stop and think about this. Customers aren't going to want to pay for information that should be included with the product. Not only does that mean that documentation can't be allowed to get worse, it's actually going to have to get significantly better.

• **Ed Foster is editor of InfoWorld in the US**





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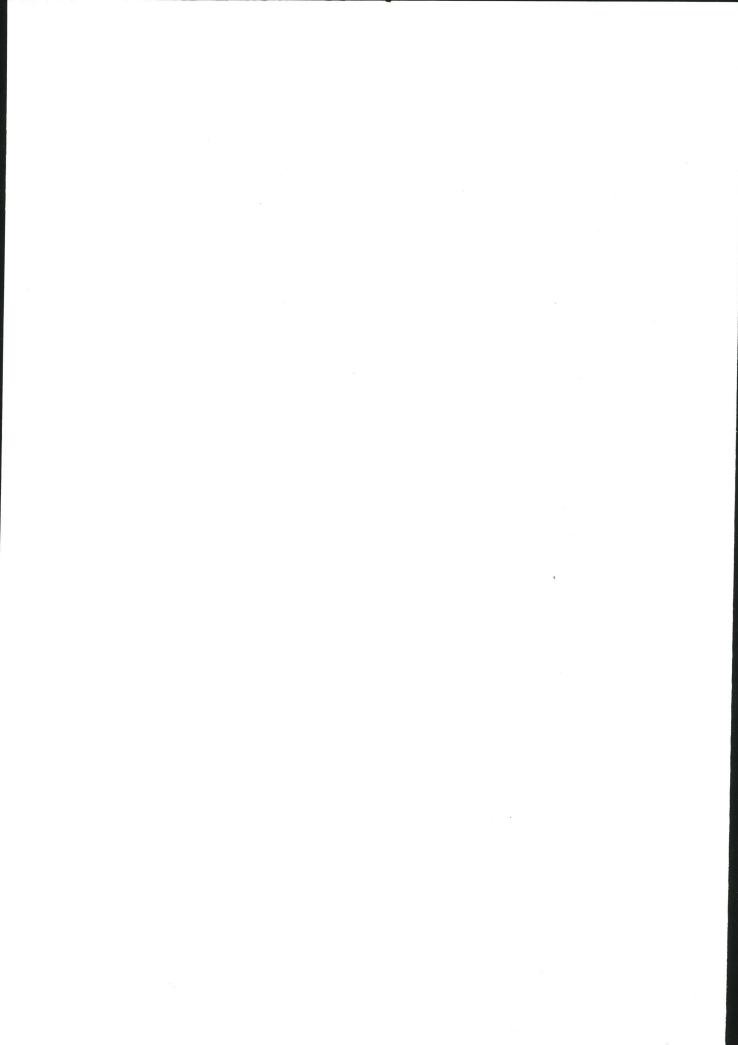
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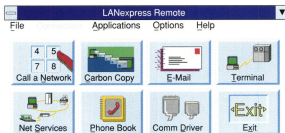
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What happened to the operating system war?



By Stewart Alsop

Suddenly, it seems as if operating systems aren't such a big issue any more. I remember giving a lot of speeches and writing a lot of columns about the OS Wars just a year ago, when Microsoft NT hadn't shipped but was just about to (and would change the world forever). But now NT has been in the field for six months and — guess what? — the world hasn't changed that much. In fact, you would have to say that, because NT hasn't had the earth-shaking impact that most people expected, choosing an operating system seems somehow a less important decision for system managers.

Here's the lineup we were agonizing over a year ago: on the desktop, Windows took the prize while Apple struggled to keep its foothold. IBM was fighting valiantly for OS/2, but couldn't seem to get the right applications to break out of programmers' offices.

On the horizon (so to speak) were a new set of operating systems designed for personal digital assistants (PDAs): Geoworks, Newton from Microsoft, and maybe something from General Magic (although we didn't know that at the time).

On the server, virtually everybody used NetWare 3.11 for file and print services. More adventurous companies used OS/2 for Lotus Notes and other workgroup applications, Banyan Vines for network integration, and Unix (most often Solaris, HP-UX, or AIX) for downsized production applications and network management.

A few used NeXTStep for developing custom applications. And there was a sense (encouraged by Microsoft) that the world needed a

new operating system platform for building new kinds of applications, particularly those for office workgroups and for developing mission-critical custom applications. The future is here (doesn't it feel great?), so it is useful to see where we stand.

The desktop still belongs to Windows, and we are still waiting for the next version, which is due late this year. Windows is such a success that Microsoft's one-time pitch that Chicago (Windows 4) would lead us naturally to Cairo (NT) seems kind of weak.

Macintosh looks a lot more interesting, based on demos of the PowerPC versions of the machine and the promised ability to run System 7 and Windows 3.1 side-by-side without performance penalty. (Remember, that's promised and demonstrated, but not delivered.) But it is still of interest mostly to today's Macintosh owners.

OS/2 is still struggling to become a desktop operating system, but is marginally more interesting now. IBM seems to be sticking to its guns and as big developers lose interest completely (WordPerfect already, perhaps Lotus next), small developers are eyeing the 4 million users IBM claims it has.

The horizon is still on the horizon. Penpoint's owner, AT&T, appears to have decided it shouldn't be in the microprocessor and operating system business. Geoworks seems to be stalled, after being backed mostly by Tandy — a company that got out of the computer business and can't decide whether it sold the PDA business, as well. Newton is widely perceived as a fail-

Continued page 22

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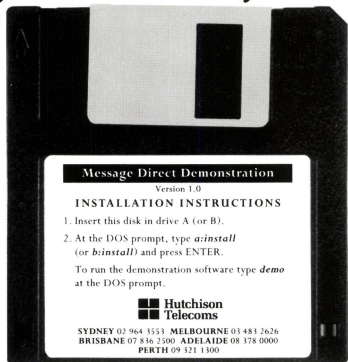
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Australian information technology — do it now!

From page 14

taking up time and charging fees. A focused one stop IT shop with business skills and financial clout is what we need.

The last main stumbling block I have found with this group of start-ups is one of government assistance. First let me say in my view there is a real enthusiasm and commitment at all levels of government towards helping local IT developers. But this effort seems so fragmented it simply is not as successful as it could be. The DITARD partnership program, Fixed Term Arrangements, R&D grants as well as various State government development programs are just some of the offerings that make it a time-consuming, complicated maze to work through and expensive for the small-to-medium developer.

What should be done now is to

have the Federal Government make the Partnership/FTA program mandatory by forcing our international IT vendors to invest in or include Australian technology in their products. The current voluntary scheme is either not working or just too slow. This will provide an immediate source of funds and should automatically pull us into international markets.

The trouble with IT is we need to be quick on our feet; therefore the Government should link timing to individual projects and build these covenants into specific acquisitions. It doesn't have to be activity-directed and it should be left to each vendor to sort out what makes good commercial sense.

The current guidelines have plenty of flexibility and are well

thought out; they just need to be enforced. Don't believe those who say this is restrictive and will prevent technology from coming to Australia. It can be clearly demonstrated that where overseas suppliers have embraced this concept it has been successful and they have increased their local market share — so governments need not feel shy, they just need to do it!

Life is all about timing, and as a small supplier with strong technology skills Australia's ability to get more than its share is good, provided we can streamline our development channels to match shorter time frames.

• Doug Rutan was general manager and founder of WordPerfect Pacific's operations in Australia

What happened to the operating system war?

From page 20

ure (that perception will change, but not for another 6 to 9 months). General Magic is in that magical phase between announcing and delivering, when everything seems possible. And Microsoft is in that magical phase before announcing Winpad, when the product will do everything and have no flaws.

So that leaves the server — where an interesting thing has happened. Both Windows NT and NetWare 4 have failed to meet sales and technical expectations. Indeed, the relatively slow acceptance of these systems is even leading some mainframe commentators to proclaim that the client/server revolution won't happen without a more structured mainframe mentality.

In truth, every operating system is finding customers who consider its features compelling. IBM's OS/2 is seen more as a full-size environment, particularly with its well-defined

object strategy in SOM (System Object Model) and DSOM (Distributed SOM) and the way that IBM has clearly committed itself over the long term to migrating to the new Taligent object model.

Combined with the growing number of users and a trickle of both desktop applications and of unique, useful application design tools, OS/2 continues to be a viable choice for customers, and IBM — ironically — ends up being a much more comfortable choice than Microsoft.

Sun's Solaris appears to be stalled, although it's not clear why. It was the first to get a complete set of development tools and a network management system, and really the first to become a viable target for downsized mainframe applications. But Solaris appears to be too closely tied to Sun's hardware strategy (which Sun has tried to change) and Sun has dithered about its object

strategy, most recently agreeing to integrated NeXTStep with Solaris. As for NT and NetWare 4, many companies are reluctant to adopt them as development platforms because they both seem inherently proprietary and yet their vendors don't seem to have any concept of what it takes to support a mission-critical platform.

This produces, in the minds and hearts of paying customers, extreme discomfort: do you bet your job on a brand new product from a vendor who doesn't seem to understand what's at stake? So, the systems are being used to develop new applications, where the stakes aren't quite as great in terms of lost business.

So everybody's got customers and nobody won the war. The more things change, the more they stay the same.

• Stewart Alsop is the editor-in-chief of InfoWorld in the US

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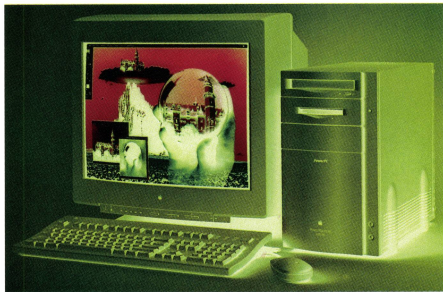
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PowerPC to challenge Intel, Microsoft



Products based on the PowerPC family of RISC microprocessors developed jointly by Apple, IBM and Motorola are starting to hit the street. Apple has unveiled its Power Macintosh, IBM is previewing the PowerPC, and other manufacturers have announced support for the microprocessor.

Executives from IBM and Apple hope to break the long-running hold that Microsoft and Intel have on desktop computing by focusing on the next generation of applications that will be made practical using low-cost RISC hardware.

However, analysts believe it will take several years for advanced applications to move far enough into the mainstream to allow IBM and Apple to effectively challenge Microsoft's dominance as a systems software supplier and Intel as a chipmaker.

According to analysts, the key for IBM and Apple will be to deliver the tools that make it easier to build advanced applications on RISC processors, which typically have a large amount of floating-point horsepower built into the chip. Because their processors are priced lower than equivalent Intel platforms and will not require an additional co-processor to run the applications, IBM and Apple are banking on their ability to deliver platforms at a lower cost than Intel.

The three companies have invested over \$US1 billion and created the Somerset Design Centre in Texas where the PowerPC processors are designed.

The PowerPC family will be made up of four chips: PowerPC 601, 603, 604 and 620.

The PowerPC 601 will be used in the initial mid-range and high-end

systems. The first machines based on this chip were released last October by IBM. The PowerPC 603 microprocessor will offer performance similar to the 601 in a lower-power, lower-cost design. According to IBM, the 603 operates at less than 2.5 watts making it ideal for notebooks.

The PowerPC 604 will eventually replace the 601 and will be aimed at mid-range and high-end Macintosh computers.

The PowerPC 620 will be a high-end product designed for high-performance workstations and servers.

Power Macintosh will offer capabilities such as speech recognition, text to speech and telephony without the need for extra hardware in the computer.

According to Apple, applications specifically written for PowerPC systems will run two to four times faster than the same applications running on the Motorola 68040 and Intel 80486 systems.

Six PowerPC-based Macintosh computers are available. All models include the hardware to support GeoPort Pods and PlainTalk. Some include the full AV feature set of telephony, video and speech.

Prices start at \$3,995 for the Power Macintosh 6100/60 with 8Mb RAM and a 160Mb hard drive.

IBM previewed its PowerPC-based machines at PC94. Models based on the 601 and 603 processors are expected later in the year.

The machines are housed in a black case and will be built to order. Users can choose the 32-bit operating system of their choice and can have peripherals such as the mouse, speakers and keyboard attached directly to the monitor. ■

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HARDWARE

Small workgroup file server

COMPAQ has added to its ProSignia family with the release of the ProSignia VS. Designed for small and medium-sized businesses, the line of servers is aimed at users who need a networking solution for sharing files, communicating information to other locations, or using business applications such as automated accounting, order entry, inventory and point-of-sale programs.

Models of the EISA-based ProSignia VS come standard with either a 486SX/33, 486DX/33 or 486DX2/66 microprocessor. Standard models include 8Mb or 16Mb RAM, an integrated NetFlex-L ENET controller on the local bus or a NetFlex-2 TR (for token ring) in an EISA slot, an integrated 32-bit fast SCSI-2 controller on the local bus, five EISA bus master expansion slots and five mass storage bays.

Users can also select models with a 535Mb or 1.05Gb hard drive. All models ship with a three year warranty. Prices start at \$3,582.

Compaq has also added three models to the network-ready ProLinea Net1 family. The "all-in-one" ProLinea Net1/33s comes standard with a 486SX/33 microprocessor, MS-DOS 6.2, and a network setup utility.

Prices start at around \$2,500.

Compaq Computer Australia
Phone: 1800 060 800



The ProSignia VS network file server for small workgroups

Colour Squirrel

CANON has released a colour screen Squirrel notebook with built-in Bubble Jet printer. Called the BN 100C it has a LCD VGA screen.

It offers 640 by 480 resolution and the screen measures 240mm diagonally.

Based on a 25MHz 486SX microprocessor, it offers a choice of 120Mb or 200Mb hard disk. It ships with 4Mb RAM as standard, upgradable to 12Mb.



The colour screen Squirrel notebook

The printer is a mini version of the BJ 10sx. It prints at up to 116 characters per second and offers 360 by 360dpi resolution.

The paper is fed into the front of the notebook and comes out the back. A 10-sheet paper feeder can also be loaded by lifting the keyboard.

The BN 100C comes standard with Windows 3.1, MS DOS 6.0 and advanced power management software.

The notebook also has a two-button trackball mouse, a 3 1/2 inch disk drive, and a long life NiCad battery pack that offers approximately 2 1/2 hours standard operation.

The notebook weighs 4kg including the battery pack and measures 312mm by 258mm by 65mm.

The 120Mb version sells for \$7,995 and the 200Mb version for \$8,995.

Canon Australia
Phone: (02) 805 2000

TOP OF THE NEWS

WP changes support

WordPerfect Pacific has enhanced its after sales support offerings with the announcement of four support programs: Classic, Silver, Gold and Platinum. The Classic Support Program is free to all registered users and gives access to WordPerfect's range of electronic services including a 24 hour, seven day a week BBS, an Interactive Voice Response (IVR) faxback system and Spaceworks, a service that gives users on-line access to the company's technical bulletin database. The Silver Support Program costs \$250 per user, per product. It builds on the services offered by the Classic Program and includes three one-on-one telephone support calls.

The Gold Support Program is designed for corporate customers. It costs \$10,000 and gives electronic mail access to WordPerfect's product specialists and users will receive support Infobases on CD-ROM.

The Platinum Support Program is designed for business-critical implementation of WordPerfect software where 24 hour, seven day a week telephone access to certified systems engineers is required. It costs \$25,000 per annum. The support programs start April 5, 1994.

Star reduces prices

Star Micronics has dropped the price of the Star SJ-144 heat-fusion printer. It has been reduced by \$200 from \$1,495 to \$1,295. Star has also reduced the price of colour ribbons for the SJ-144 by 50 per cent.

The recommended retail price of the ribbons is \$15.90 each. The SJ-144 features a printhead that comprises 144 elements and can print 2.5 lines of text and three lines of graphic data simultaneously. It offers 360 by 360dpi resolution and ships with 15 scalable TrueType fonts.

EDGE TECHNOLOGY

"Quality By Design"

The NBD 486 series has everything you're looking for in a notebook

Large 10" LCD, VGA screen * Intel i486 CPU * Sound Card option *Suspend/Resume energy saver button *PCMCIA versatility *Four Level Intelligent Power Management * Internal Fax & DataModem Option * Big Trackball, Big Buttons * Intellisensor™, protects your data when notebook is accidentally left on.

Three models to chose from:

The NBD 486 SX-25 beautiful 64 Grayscale Clarity.

The NBD 486C SX-25, DX-33 affordable dual scan colour.

The NBD 486T SX-25, DX-33 active matrix colour-simply the best.

Memory: 4MB RAM exp to 32MB (supports shadow RAM and EMS 4.0)

Storage: 80,120,200 or 250MB hard drive 3.5" 1.44MB floppy disk drive

I/O ports: Serial, parallel, external keyboard, analog CRT, expansion bus ports, PCMCIA 2.0 PC card slot, sound input and output jacks.

Weight: Under 3Kgs

Size: 290mmx216mmx46mm mono or 52mm colour.

Power: Removable rapid charge NiCad battery; 100-240 volt auto-sensing AC adapter.

Supports: MS-DOS, MS-Windows, OS/2, XENIX, and UNIX



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ADELAIDE: Unit 6, 4-6 Coglin St, Brompton SA 5007
PERTH: 6 Rowe Ave, Rivervale WA 6103
NEW ZEALAND: Unit 7, Basilton Park, 97 Mt Eden Rd, Auckland NZ

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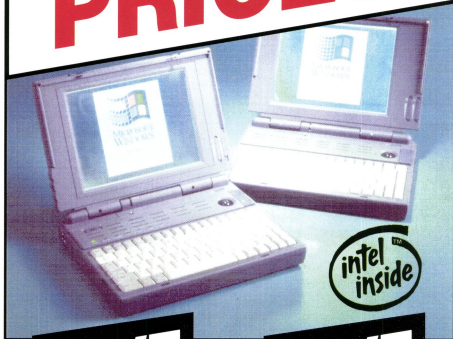
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Intel 486DX2 50 Versions Available

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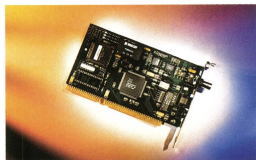
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PH 03 818 5022 FAX 03 818 5122

Ethernet adaptors

KINGSTON Technology has released two lines of software-configurable Ethernet Adaptors. Called the EtherX 2000+ network interface cards, they are available



The software configurable EtherX 2000+

with a single RJ-45 10Base-T interface, a single BNC 10Base2 interface and a triple interface version with support for 10Base-T, 10Base2 and 10Base5. The EtherX 2000+ is compliant with IEEE 802.3 Ethernet specifications, for interoperability and compatibility with popular network operating systems.

Prices start at \$116.

Australasian Memory
Phone: (02) 899 5637

Optima family from Hayes

THE Hayes Optima 288 V.FC + Fax, Optima 144 + Fax144 and Optima 96 + Fax96 provide data communications and send/receive fax capabilities. The products feature AutoFax which allows automatic receipt of faxes or data calls on a single telephone line.

Hayes Optima data + fax products ship with Smartcom for Windows LE and Smartcom Fax for Windows communications software.

The Optima 288 V.FC + fax is a data and fax modem with data throughput capabilities to 230.4 Kbit/sec using data compression.

The Optima 144 + Fax144 supports 14,400bit/sec, 9,600bit/sec, 2,400bit/sec and 1,200bit/sec, as well

as 300bit/sec and 1,200bit/sec for data communications.

The product also supports ITU-T V.42 error-control and ITU-T V.42 bis data compression for data throughput up to 115,200bit/sec. It also supports ITU-T Group 3 fax standard V.17 for 14,400bit/sec, providing send/receive fax transmission to 14,400bit/sec.

The modem communicates asynchronously and synchronously, and supports Hayes AutoSync.

Optima 96 + Fax96 supports 9,600bit/sec, 2,400bit/sec and 1,200bit/sec, as well as 300 bit/sec and 1,200bit/sec for data communications.

The product also supports ITU-T V.42 error-control and ITU-T V.42 bis

data compression for data throughput to 38,400bit/sec. For fax communications, it supports ITU Group 3 fax standards V.29 and V.27 ter, providing send/receive fax transmission to 9,600bit/sec.

It supports asynchronous and synchronous communications and Hayes AutoSync.

Smartcom for Windows LE includes a phone book feature to store phone numbers; Smart Buttons to automate communications; popular file transfer protocols; multiple terminal emulations; and a peruse buffer with print and disk capture.

Smartcom Fax for Windows is a fax program designed to make it easy to exchange faxes containing text and graphics with fax machines and other fax-equipped PCs. It allows users to send fax documents directly from within any Windows application that supports the Print command.

The Hayes Optima products ship with a two-year limited performance warranty. The Hayes Optima 288 V.FC + Fax, Optima 144 + Fax144 and Optima 96 + Fax96 sell for \$1,520, \$1,040 and \$950 respectively.

MPA International
Phone: (03) 724 4444
Merisel
Phone: (02) 882 8888

TOP OF THE NEWS

Microsoft drops compression from MS-DOS 6.x

Microsoft, pre-empting a possible injunction order, has removed the DoubleSpace feature in MS-DOS 6.2 and will ship Version 6.21, which is stripped of the data compression capability. The move follows a US District Court ruling that the compression technology in MS-DOS 6.x violates patents held by Stac, and charged them with \$US 120 million in damages.

Users of MS-DOS 6.0 and 6.2 who have compressed their disks with DoubleSpace, can continue to use the technology, Microsoft officials said. Microsoft will try to develop or acquire compression technology to replace DoubleSpace if the patent violations are not overturned, officials said.

Notebook with built-in AC adaptor

Compaq has replaced the LTE Lite notebooks with the LTE Elite family. Featuring a built-in AC adaptor, and a total carrying weight of 3.1kg, prices start at \$6,409.

Total carrying weight (TCW) refers to the weight of the AC adaptor, power cord and trackball. Other features include user-upgradable memory, microprocessor, display and removable hard drive.

The notebooks come standard with a 170Mb hard drive, upgradable to 340Mb or 510Mb, a choice of two Type II or one Type III PCMCIA slots, a Plug and Play feature that gives users "hot pluggable" access to the pointing device, external monitor and keyboard without having to reboot.

The Compaq LTE Elite comes preinstalled with MS-DOS 6.2, Windows 3.1, Microsoft Video for Windows 1.1 Runtime and Compaq's TabWorks.

EDGE TECHNOLOGY

EPSON PRINTERS



LQ-100

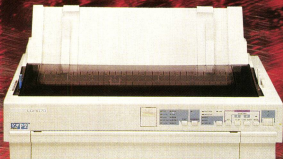
The new standard in size and performance.

Sleek, compact styling with big printer performance. With built in scalable fonts and enhanced graphics capabilities the LQ-100 is ideal for home or office use.

LQ-1070

Affordable wide carriage printing.

Ideal for spreadsheets as well as general office use this very reliable printer supports the advanced capabilities of the new Epson ESC/P2 control code with scalable fonts.



LQ-570+

Introducing the faster, quieter new Epson LQ-570+ for home and office.

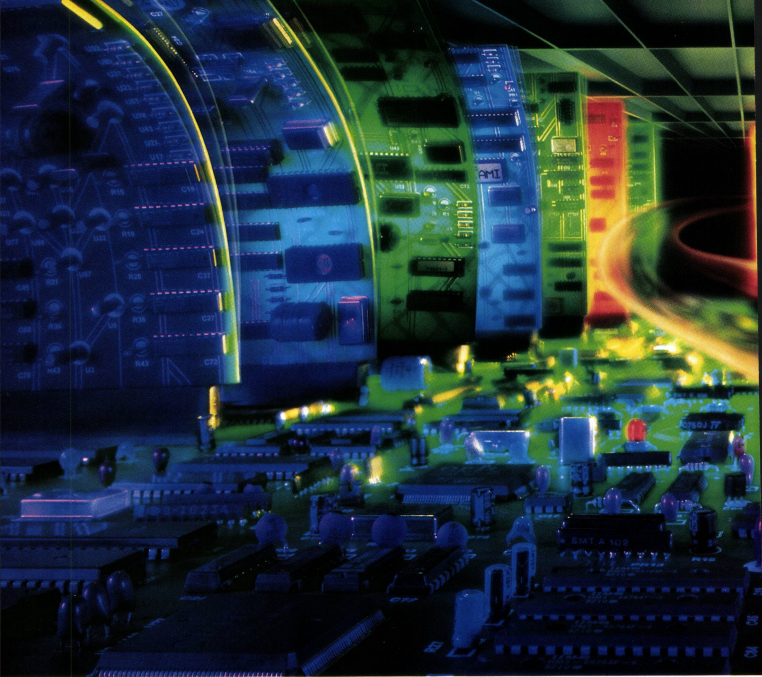
With print speeds far beyond any comparable printer the new LQ-570+ has enhanced scalable fonts, raster graphics capability and exceptional flexibility. The quieter operation of LQ-570+ rivals the noise level of non-impact printers.



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Imagine what it will



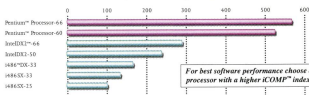
The Intel Pentium™ microprocessor will have an amazing effect on your favourite software applications.

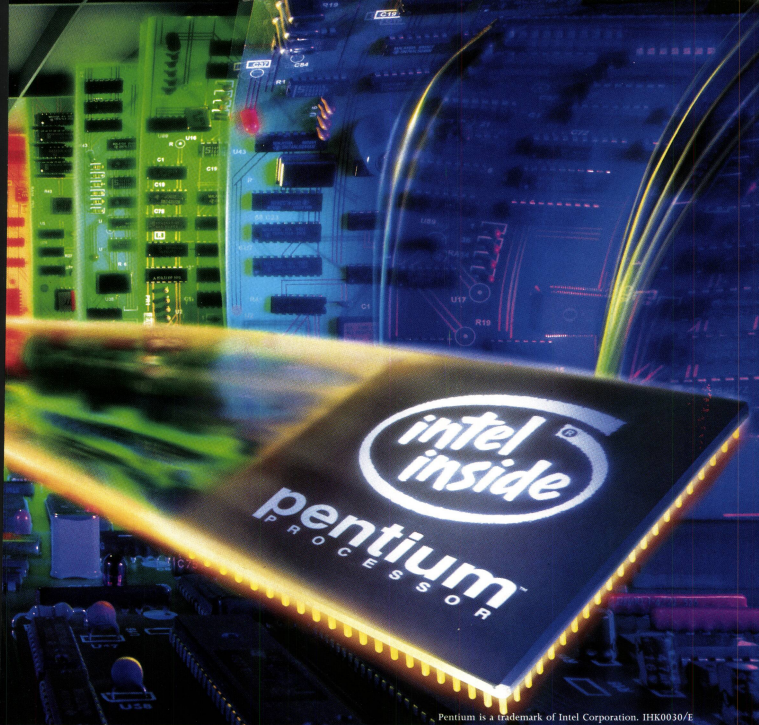
For starters, you'll be able to access them much faster. And even your most demanding software will respond quickly to your points and clicks.

Pentium processor performance also means you won't have to sit waiting for graphics, charts and pictures to appear on the screen. They'll just be there.

All the leading manufacturers have introduced designs based

The Intel iCOMP™ Index of Relative Performance





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do for your software.

on the Pentium processor, and these are not your average PCs. In addition to enhancements such as more RAM and larger hard drives, they feature important design improvements like the PCI local bus. That means they can handle the most innovative technologies.

And the best news is that these systems are available today, at surprisingly affordable prices. As always, because it's an Intel Inside processor, you can be assured the Pentium processor is compatible with all the software written for the PC.

Whether it's everyday word processing software, or CD-ROM multimedia applications.

So don't leave it to your imagination. See for yourself how your software responds to the power of the Pentium processor.

For more information, talk to your dealer, or phone (02)975 3922 and press 3011 to receive detailed information by fax.

intel®

Z-Station 500 line of PCs

ZENITH Data Systems has introduced a line of high-performance workstations. Called the Z-Station 500, they are an extension to the Z-Station desktop line.

They incorporate PCI local bus video, integrated connectivity, power management capabilities, and support for future Intel OverDrive processors.

The Z-Station 500 ships with built-in Ethernet 10Base-T and AUI connector on the system board. The line offers a choice of i486 processor, 33SX, 50DX/2 and 66DX/2. It comes standard with 128K secondary write back cache, upgradable to 512K. It features 8Mb of base memory, upgradable to 128Mb. Base models comply with the EPA energy star guidelines. It is available as desktop or mini tower with a choice of hard drives; 245Mb, 340Mb or 510Mb.

Prices start at \$3,920 for a network ready Z-Station 500486/33SX with 8Mb RAM, 245Mb hard drive, Ethernet controller, Network Client Shells, DOS 6.2 and Windows for Workgroups 3.11.

Zenith Data Systems
Phone: (02) 417 1522



The Z-Station 500 extends ZDS desktop line

High-speed LQ printer

THE CI-6024 high-speed letter quality printer has been added to the C.Itoh range. The printer offers performance up to 925cps in draft mode and up to 308cps in letter quality mode.

It offers five paper paths and dual tractors at front and rear. The CI-6024 features emulation of the IBM Proprinter XL24e. Standard fonts include Courier 10, Prestige Elite 12 and Bold PS. The printer also offers a Copy Plus mode that allows users to produce up to seven copies. The printer offers the ability for three stored configurations and a 40 character LCD display.

Optional features include single or dual bin auto sheet feeders and a colour printing capability. A pedestal stand is also available that allows two stacks of input paper, front and rear.

Anitech
Phone: (02) 749 1244

Network your CD-ROMs

THE Discport is a plug-and-play solution, the size of a videotape, that lets users share CD-ROM drives over a Novell LAN. Users access CD-ROM drives as if they were a hard drive on the network file server. Up to seven CD-ROM drives can be



CD-ROM drives can be shared over LANs with the Discport

Graphics performance

DIGITAL Equipment Corporation has announced the DEC chip 21030 graphics chip, a PCI-based graphics accelerator chip.

Targeted at the high-performance PCI-based desktop market, it enables PCs to support 3D CAD, visualisation, graphic arts and other applications requiring workstation-class graphics.

The graphics chip reaches resolutions of up to 1,600 by 1,280 pixels with support for 16.7 million colours.

According to Digital, PCs incorporating the chip can support 3D CAD applications such as wire frame and solid modelling, virtual reality and animation, and high-end desktop publishing and drawing applications.

The chip ships with software drivers that support Windows NT, and OpenGL for Alpha AXP microprocessors. Windows 3.1

drivers are also available for Intel microprocessors.

Digital Equipment Corporation
Phone: (02) 561 5252

Magneto optical drives

PINNACLE Micro's range of magneto optical (MO) drives are now available in Australia. The drives include the portable Tahoe and the Sierra external units.

Both drives include Pinnacle's optical and electronic speed enhancements including built-in CPU control and advanced caching. The optical storage used in the Pinnacle products allows data to be stored at high densities; up to 1.3Gb on the 5 1/4in drive and 128Mb on the 3 1/2in drive.

The Pinnacle range offers transfer rates up to 2Mb per second. Prices start at \$2,500.

Chips and Bits
Phone: (03) 696 1911

attached to one Disport and multiple Disports can be attached to the LAN. Disport is packaged with Discview, a Windows based software application that includes three levels of operation for installation, management and use.

It lets users organise and access the entire collection of CDs available on the network.

The Disport connects to thin Ethernet or 10Base-T networks and uses a SCSI connector to daisy chain external CD-ROM drives. It is compatible with Novell NetWare 3.11, 12 as well as NetWare 4.0.

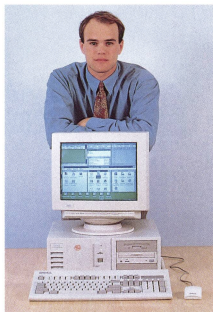
Disport sells for \$1,295.

SCSI Corporation

Phone: (02) 894 6033

OmniPlex family

DELL has unveiled its family of Pentium-processor based PCs, the Dell OmniPlex 560 and 566. They feature optimised EISA-based design and PCI local bus technology. Designed for users working in a mission critical, corporate environment and requiring features and system performance, the OmniPlex systems are based on PCI and EISA design and feature the Pentium 60 and 66MHz



The Dell OmniPlex EISA-based Pentium machine

microprocessors. Enhancements to the OmniPlex workstation include: a 64-bit Pentium processor located on a 64-bit processor bus along with cache and system RAM, running at either 60MHz or 66MHz; PCI local bus; a higher performance video subsystem located on the internal PCI bus; and an integrated SCSI 2 controller.

Features of the OmniPlex family include: Processor-Memory Complex — the Pentium processor, secondary write-cache and system main memory all reside on a 64-bit, 66MHz processor bus; PCI "Bridge" — an array of three ASIC's forms the PCI bridge that steps signals from the processor bus to the internal PCI bus; PCI bus — the PCI bus is both internal and external.

All Dell OmniPlex systems include DOS 6.2, SVGA monitor, Windows 3.1 and mouse. Prices start at \$6,995 for the 60MHz model with 8Mb RAM and a 270Mb hard drive.

Dell Computer

Phone: 008 810 676

PCMCIA Ethernet card

KINGSTON Technology has released two high-performance PCMCIA Ethernet cards. Called the EtherX PCMCIA Ethernet cards, they are available in either 10Base-T or 10Base-2 versions. They support network operating systems including Novell NetWare, IBM LAN Manager, Windows for Workgroups and Banyan Vines. The products support "Hot Swapping" for card removal, which lets users remove the card without powering-down the system. The 10Base-T version of the EtherX PCMCIA Ethernet card sells for \$398 and the 10Base-2 for \$446.

Kingston Technology

Phone: (03) 690 9699

MyModem

BANKSIA Technology has released the MyModem fax/modem. Designed for the SOHO market, it offers data and fax transmit and receive speeds up to 14,400bit/sec. It is an asynchronous modem that features V.42 error correction and V.42bis data compression. It allows >

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Name (please print)

Company

Address

..... Postcode

Business Phone ()

Type of Business

..... No. of Employees

Disk Size ☐ 5.25 ☐ 3.5

Areas of Interest (please tick)

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> CashBook | <input type="checkbox"/> CashRegister |
| <input type="checkbox"/> General Ledger | <input type="checkbox"/> Products |
| <input type="checkbox"/> Suppliers | <input type="checkbox"/> Invoicing |
| <input type="checkbox"/> Payroll | <input type="checkbox"/> Customers |
| <input type="checkbox"/> Report Writer | <input type="checkbox"/> Multi User |
| <input type="checkbox"/> Other | |

fax transmission to operate in background mode and has a broadcast fax capability. The MyModem also has an auto detection features that distinguishes between faxes and data calls online.

It comes bundled with the Windows version of QuickLink II fax and communications software. This allows users to transmit or receive fax or data directly from any Windows application.

The Banksia MyModem sells for \$699.

Banksia Technology
Phone: (02) 977 7561



The Banksia MyModem fax/modem designed for the SOHO market

Dual Scan colour notebook

THE TravelMate 4000E Dual Scan colour notebook is the latest addition to the Texas Instruments' family of notebooks. Based on a 50MHz 486DX2 processor, it ships with 4Mb RAM, expandable to 20Mb, and a 200Mb hard drive. It features BatteryPro power management, a high-speed video system, and a display that shows 256 colours at 640 by 480 resolution.

The Dual Scan screen has two panels incorporated to work as one. The scan starts at the top of both halves simultaneously. All models in the 4000E series features a keyboard that offers 12 separate function keys, plus dedicated page up, pages down, home and end keys.

The keyboard also includes "N-key rollover", a feature that



Texas Instruments TravelMate 4000E dual scan colour notebook

prevents lock-up when multiple keys are simultaneously depressed. The TravelMate 4000E Dual Scan colour notebook sells for \$6,920.

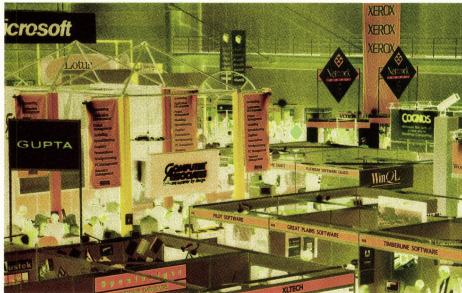
Texas Instruments
Phone: (02) 910 3100

PC World — Business Solutions Show

The latest computer products, technologies and services will be on show at PC World — The Business Solutions Show.

To be held at Darling Harbour from 10-12 May, the show will incorporate the Windows World Expo and present a wide range of hardware and software, providing coverage of the latest in PC computing for both business and personal use.

The Network World Expo is being conducted concurrently with the Show. The combined events will bring together over 100 suppliers, including Novell, Banyan, Microsoft, Lotus, Sun, WordPerfect and Intel.



The 1994 Networkers' Forum will also be held in conjunction with the Show.

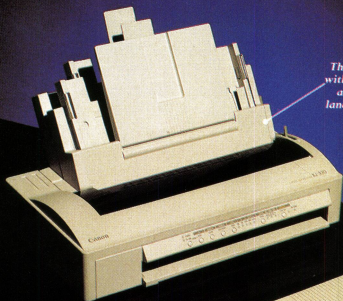
The forum will address the full spectrum of networking, including hot issues, enterprise networking and local area networking, through keynote addresses, tutorials and panel sessions.

PC World readers are eligible for a free pass to PC World — The Business Solutions Show and the Network World Expo.

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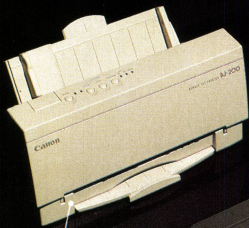
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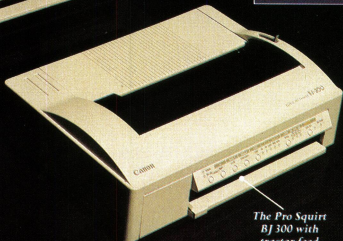


The Pro Squire BJ 330 with dual cut sheet feed as shown prints A3 landscape and even A2.

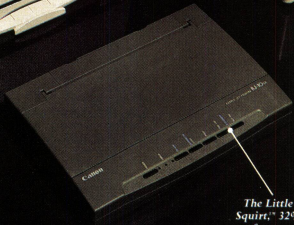
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BEST BUY **PC World - March 1994**

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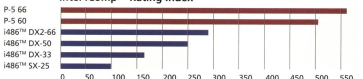
Our Diamond Stealth 32 & Viper PCI Graphics Accelerators lead the world in "PCI Performance" and true "Heavyweight Graphics Punch". Also our Fast!SCSI-2 PCI Controllers deliver the type of disk throughput you've always wanted, and the SCSI Interface ensures compatibility with CD Roms, Tape & Floptical Drives for the future.

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Intel iComp™ Rating Index*



*The iComp index is an Intel microprocessor horsepower rating. It is a composite of selected performance measurements from SPECint, 2D Bench, & Power Meter. Source: Comp™. A simplified measure of Relative Intel Microprocessor Performance, Intel Corp., 1992.

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SOFTWARE

cc:Mail Mobile for Windows

LOTUS Developments has announced Lotus cc:Mail Mobile for Windows Release 2.0. It gives travelling professionals the ability to send and receive messages over a wide-area network, using a modem, network protocols or wireless connection.

Features of Lotus cc:Mail Mobile for Windows include: icon-based location profiles; a message preview function that helps keep connect time to a minimum; and wide-area network communications support.

The icon-based location profiles allows users to specify location profiles for frequently visited destinations, with icons representing the locations. When users click on the icon the communications settings are automatically chosen.

The program also offers context-sensitive pick lists; pre-configured "dialling rules"; multiple connection methods; and background transmission and reception.

The context-sensitive pick lists guide the user through the initial process of assigning communications settings to locations. Settings include: communication type, serial port settings, baud rates and telephone dialling options.

The Multiple communication methods lets users select up to eight communication methods per location. Protocols supported include TCP/IP, ISDN and PBX.

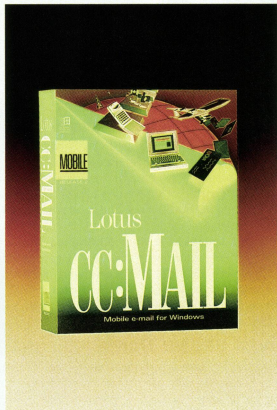
cc:Mail Mobile for Windows also supports background transmission/reception allowing you to send and receive messages while in other applications. It lets you schedule times to make a connection for a given location on an hourly, daily or weekly basis.

cc:Mail Mobile for Windows features Docking Assistant. It is software assistance that helps occasionally connected users keep their mobile and LAN mail boxes up-to-date.

Lotus cc:Mail Mobile for Windows sells for \$295. Upgrades are available for \$145 for existing users of cc:Mail remote for DOS or users of cc:Mail LAN clients.

Lotus Development

Phone: 008 252 408



cc:Mail Mobile for Windows 2.0 features icon-based location profiles, a message preview function, and WAN communications support

Borland Office 2.0 for Windows

BORLAND International and WordPerfect have announced Borland Office 2.0 for Windows, an upgrade of the companies' joint product suite.

The workgroup enabled software suite includes enhanced cross-application integration and built-in client/server connectivity. Borland Office 2.0 includes WordPerfect 6.0 for Windows,

Borland Quattro Pro 5.0 for Windows Workgroup Edition and Paradox 4.5 for Windows Workgroup Edition. It also includes a Workgroup Desktop for sharing of information among users as well as applications.

The suite includes Perfect Fit Technology which provides a common look throughout all of the suite components.

Features include; Desktop Application Director (DAD) which allows users to navigate through the suite's applications, features and integration tools; Desktop Finder

which gives users file management capabilities in all the suite applications; Common customisable icons, which lets users choose the icons they are familiar with; and Common Install, which installs all the suite's programs at once.

The suite also offers Integrated Presentation Graphics which lets users create and customise charts and drawings in the word processor and the spreadsheet.

Borland Office 2.0 sells for \$995.

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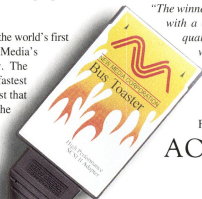


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Our PCMCIA to SCSI adapter cards give you the ability to connect to any SCSI peripheral; printers, scanners, CD-ROMs hard drives, tape drives, even color printers. Every New Media PCMCIA to SCSI adapter ships with our SCSI ASPI manager client driver software for true "Plug-and-Play". Our easy to use installation software coupled with Corel's SCSI version 2.0 software assures compatibility with any SCSI peripheral.

The Bus Toaster - from the people who brought you the world's first PCMCIA to SCSI adapter, this is the latest in New Media's PCMCIA to SCSI adapter technology. The Bus Toaster outperforms even the fastest ISA bus SCSI adapters. It's so fast that we guarantee that we won't be the constraining factor in performance. Our ASPI manager client driver shuts down the card during periods of inactivity to a cool 75mW, barely noticeable to most laptops.



Our WAVjammer 16 bit stereo sound card gives you CD-quality recording and playback. The WAVjammer is equal in performance to the industry standard Microsoft Sound System for desktop PCs. The WAVjammer ships with New Media's true "Plug-and-Play" client driver, our Windows VXD driver, and Microsoft Sound System 2.0 for full featured professional audio sound. With the voice recognition through Microsoft Sound System 2.0 you can run Windows applications by voice. The WAVjammer is Adlib and Sound Blaster compatible.



Our 24/96 data fax modems are designed to the highest communications standards. Based on Rockwell modem technology, you are assured of worldwide communications compatibility. Our 24/96 fax modem is among the lowest power in the world. You can use it in even the lowest power applications such as the Tandy Zoomer PDA. Error correction and data compression (v.42bis/NMP 5) via the Rockwell Protocol Interface (RPI) maximizes data modem rates to 9.6 Kbps. You can send and receive faxes at the popular Group 3 rate (9.6 Kbps).



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- Portia Isaacson
OEM Magazine
October 1993

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PCI: the latest in local bus technology

Optima thinks beyond just processor speed to total system throughput. Since I/O bottle-necks can leave even the speediest processor cycling idly, what's needed to optimise overall performance is a wide and fast CPU-to peripheral data path.

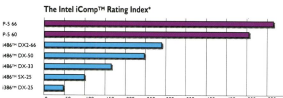
Capable of supporting a 132 Mb/sec data transfer rate, PCI local bus technology fits the bill. It's destined to become the new standard in high-performance local bus architecture, and leaves the door wide open to future technology. And PCI offers immediate new benefits like auto-configuration for PCI adapter cards.

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*The iComp index is an Intel microprocessor "benchmark" rating. It is a composite of selected performance measurements from SPEC 92, ZD Bench, and Power Mark. Source: "Comp™". A Simplified Measure of Relative Intel Microprocessor Performance. Intel Corp. 1992.

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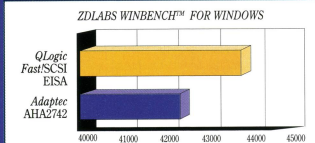
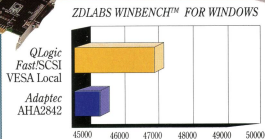
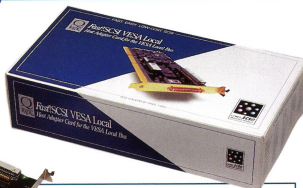
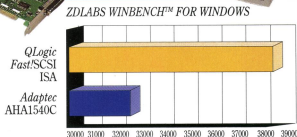
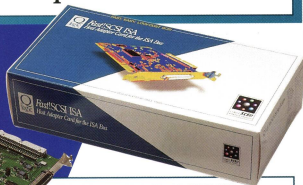
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LANtastic v6.0

ARTISOFT has announced version 6.0 of its LANtastic network operating system. The upgrade includes feature additions and enhancements, including integrated groupware, modular structure and a universal client technology. The universal client technology provides desktop connectivity to Novell, Microsoft and IBM network servers. An integrated groupware system includes advanced electronic mail, network scheduling, faxing and paging features. The LANtastic v6.0 network also includes improved network performance and enhanced network management capabilities.

The modular design of the network software allows users to configure their network server with selected features. File and print services, accounts, security, management and remote boot support can be individually selected to customise each LANtastic v6.0 network server.

It also offers a burst mode feature that adds a performance boost to the network as it enables workstations and servers to send more data across the network at faster speeds.

The advanced management capabilities allow users with the management privilege to get configuration, status and performance statistics for any LANtastic v6.0 network server. It lets network administrator monitor and receive warnings for low server disk capacity or excessive CPU utilisation.

The LANtastic v6.0 network is sold on a per node basis. Prices start at \$175 and upgrades begin at \$57 per node.

Artisoft Australia
Phone: (02) 880 2688



LANtastic v6.0 offers universal client technology and integrated groupware

UnderCover Notes add-on

POLYSOFT Australia has announced UnderCover, a Lotus Notes full-time information monitoring agent. It is an enhancement product for Lotus Notes that can monitor and retrieve information for an organisation's notes servers.

Features of the program include support for simple and advanced queries; full and incremental queries; flexible scheduling; optimised built-in scheduler, which minimises the load on the server; multiple actions per query per database — once documents are located, UnderCover can notify users/groups, copy the documents to another database, delete the documents, run a Notes macro on them; and true background macros

— Notes administrators and developers can schedule macros that run on all documents in a view regardless of whether they have been previously processed by that macro or not.

UnderCover requires Lotus Notes release 3.0 or above for OS/2 or Windows. It ships on a single 3½-inch disk containing UnderCover for Windows; UnderCover for OS/2; one Notes database containing documentation and configuration forms; and technical support information.

UnderCover is licensed per Lotus Notes server for an unlimited number of users. The licence costs \$1,250.

PolySoft Australia
Phone: (02) 962 9146

Windows presentation system

CA-CRICKET Presents 1.5 is a desktop presentation system for Windows. It includes CA-Cricket Player, a runtime version of Video Presents, and allows anyone with a PC to view a presentation without having CA-Cricket Presents. Video Presents allows the monitor of a PC to be used like a slide projector to display a presentation. Registered users of CA-Cricket Presents may distribute CA-Cricket Player free of charge. CA-Cricket Presents 1.5 is also compatible with Adobe TypeManager (Type 1) TrueType and Bitstream's Facelift. CA-Cricket Presents 1.5 sells for \$195; upgrades are available for \$95.

Computer Associates
Phone: (02) 923 2066

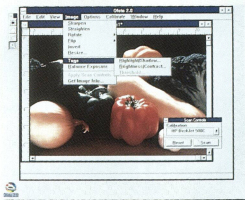
Colour scanning and printing software

InfoMagic Australia has announced OFOTO version 2.0 for Windows. Originally available for the Macintosh, it is colour scanning and printing software that automatically scans and classifies images as either colour, greyscale photo, or black and white line art.

It adjusts the resolution and bit depth and then straightens, crops and sharpens the image.

OFOTO version 2.0 for Windows uses Adaptive Calibration technology to ensure accurate colour reproduction from scan to print. It operates on flatbed desktop scanners including Agfa, Hewlett-Packard and Microtek and sells for \$465.

InfoMagic
Phone: (02) 930 3900



OFOTO version 2.0 for Windows adjusts according to the resolution and bit depth of the image

Once the model is complete, InfoModeler automatically generates the logical view of the information by mapping English facts into relational databases.

When the design is complete it generates the actual database from the logical model.

The program provides a set of visual modelling tools including the Fact Compiler which lets the designer enter information in English; the Fact Diagrammer, which uses graphical tools to enhance the information model; the Table Browser, which provides a detailed view of the logical data model; the Database Generator, which generates full optimised database definition; and the Report Generator, which creates InfoModeler reports in graphical and table formats.

The Asymetrix InfoModeler for Desktop Database Systems sells for \$1,295; for Oracle 7 Systems \$2,495; and for Microsoft/Sybase SQL Server Systems \$2,495.

Evaluation kits are also available for \$29.95.

Asymetrix Asia Pacific
Phone: (03) 525 5471

Teach yourself to type

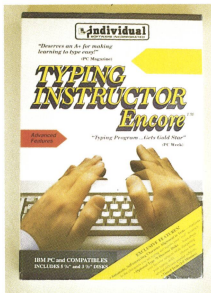
TYPING Instructor is a computer based training program that teaches you to type. It lets you learn at your own pace, test yourself, and see your

improvements using numeric and graphic charts.

It teaches you the basics, from finger placement and hand posture, to location of important keys. The program teaches touch typing with lessons designed to let you start at the home keys or brush up on hard-to-type keys.

Typing Instructor also features practical exercises designed to increase speed and accuracy. It sells for \$59.

CybaSystems
Phone: (02) 875 4181



Typing Instructor is a computer based training program that lets you learn at your own pace

Windows design tool

ASYMETRIX InfoModeler is a Windows-based design tool. It automates the database generation process, eliminating labour-intensive, manual database-design steps.

Using InfoModeler's Formal Object Role Modeling Language (FORML), the designer enters a conceptual view of the information system that reflects the data requirements along with samples of the data.

Graphic suite

GRAPHICS Works for Windows is a business graphics software suite made up of five programs plus a CD-ROM containing 10,000 clip art and 1,000 colour photos.

The programs are Windows Draw, PhotoMagic for Windows, Windows OrgChart, WinChart, and SlideShow.

Windows Draw is a Windows drawing program; PhotoMagic for Windows is an image-editing program; OrgChart is a fully functional organisation charting program with point and click design and editing.

WinChart is a charting program; and SlideShow brings together the images from the four programs using features such as blending, fading, and wiping.

The Micrografx Graphics Works sells for \$155.

Micrografx Australia
Phone: (02) 415 2642

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COMMUNICATIONS

Snappable hub

ADC Telecommunications Australia has announced SnapLAN, a five-module "snappable" hub system for Ethernet and token ring networks with a coupling design that eliminates bus cables. Targeted at remote office networks, it offers managed connectivity for between four and 56 users and a multiprotocol wide-area network (WAN) router module. The SnapLAN system offers an interlocking design that enables network installation by stacking SnapLAN modules on top of each other and snapping them together. The modules automatically connect, making it possible for non-technical remote office users to install the network. SnapLAN also offers the ability to build a hub stack that combines both Ethernet and token ring networks, including the ability to manage both network protocols from a single management module. The five modules include Ethernet Hub Module, with RJ-45 ports for 10BaseT networks, it can be scaled from eight to 60 users in eight-user increments; The Token Ring Hub Module, which has RJ-45 ports for shielded or unshielded twisted pair cable and can be scaled from four to 40 users in 12-user increments; and The Token Ring Management Module, which has an on-board SNMP agent to collect a complete set of token ring statistics and to detect and isolate beaconing conditions, limiting their impact on the network. Prices vary depending upon the number of users supported.

Managed Ethernet systems range from \$134 per port to \$259 per port; managed token ring systems range from \$297 per port to \$743 per port. The price for the router module ranges from \$5,935 for one LAN protocol and one WAN port to \$9,650 for dual LAN protocol and dual WAN support.

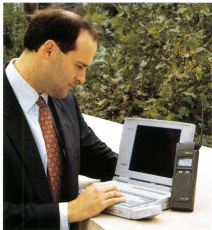
ADC Telecommunications Australia

Phone: (02) 975 1499



Blue Sky for Microsoft Mail Remote

BLUE Sky for Microsoft is a wireless mail enabler that is integrated with Microsoft Mail Remote. It is Australia's first commercial implementation of a wireless mobile



Blue Sky for Microsoft makes it possible for mobile users to retrieve electronic mail without the dependence on wire

electronic mail system. Sitting below Microsoft Mail Remote's built-in communications software, it interfaces with an Ericsson Mobidem wireless modem. Designed to enable electronic mail to be carried over BellSouth Mobile Data's digital-based trunked radio network, it is a series of Windows Dynamic Link Libraries with associated executables which carry out diagnostics on the modem and the network.

The software sits below the electronic mail communications software and is modular in nature making it possible to build mail-enabled applications which sit above Microsoft Mail Remote regardless of whether the connection is wireline or wireless.

Blue Sky Communications

Phone: (02) 247 7261

Windows network management

NETWORTH has announced HubView for NetWare Management System (NMS), a Windows-based

network management package that manages NetWorth concentrators via SNMP over an IPX network. HubView for NMS exploits the capabilities of Novell's NetWare Management System including: auto-discovery, network mapping, integrated database access and graphical user interface.

Features of HubView for NMS include management of Ethernet and token ring LANs; ability to reassign or change Ethernet segments to backplanes; and the ability to establish redundant link connections for critical networks.

NetWorth has also announced the Series 6000 PowerBuilder Switching and Network Services Hub with the Network Services Engine (NSE). The Series 6000 PowerBuilder is a multifunctional hub that provides high-speed connectivity, an embedded server, switching router and wide-area connectivity. The Series 6000 PowerBuilder Hub with NSE sells for \$13,141 (ex tax).

Lonvision

Phone: (02) 417 2711

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Network Security

Authors: David Stang and Sylvia Moon

You've read in *Hackers* or *The Cuckoo's Egg* how computer systems are vulnerable to electronic break-ins that allow snoopers access to everything from top secret government files to electronic money orders. Now security experts David Stang and Sylvia Moon show today's network administrators how to protect their valuable data from theft and destruction by hackers, viruses, corporate spies and more!

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MORE Windows 3.1 Secrets

Author: Brian Livingston

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The image shows a 3D perspective of the AutoCAD LT for Windows software box. The box is white with a red spine. The front cover features a stylized illustration of two people working on a computer, with a cityscape in the background. The text 'AutoCAD LT' is prominently displayed in a large, serif font, with 'FOR WINDOWS' in a smaller font below it. The Autodesk logo is visible in the top right corner of the front cover. The spine of the box also features the 'AutoCAD LT FOR WINDOWS' text in a large, serif font.

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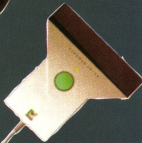
• Of course, AutoCAD LT software is based on AutoCAD – the world standard. So it gives you features other low-cost CAD programs can't touch. Like more accurate 2D drawing tools for designing discrete parts. 3D design and layout tools and full support for layers and blocks. You can even link drawings, so changes on the master are automatically reflected in other drawings. • AutoCAD LT also reads and writes data just like AutoCAD Software. So your work will be compatible with more than one million AutoCAD users worldwide – including many of your clients and colleagues. • Take the next step and call your Authorised Autodesk Distributor on 008-804 407 for more information and your free demonstration disk.

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senseware



LOGITECH SENSEWARE PRODUCTS SHOWN: **PowerPage** 256 greyscale full page desktop "portable" scanner - plugs into parallel port features sheet fed or hand held options. Anti-clockwise above: **TrackMan Portable** precision trackball for portable and desktop systems. **CyberMan** mouse/game controller operates games with yaw, pitch and roll. **MouseMan Cordless** mouse uses radio and special software for superb performance. **FotoMan Plus** digital camera downloads pictures instantly into your computer - no processing! **ScanMan Colour**. Capture and edit images in 16.6 million colours or 256 greyscale. Scan as large an image as your computer's memory can handle using Logitech's unique AutoStitch software, or scan in text for OCR in more flexible ways and for half the cost of a flatbed scanner. **AudioMan** compact digital audio input-output tool plugs into parallel port and includes dynamic speaker plus microphone.

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Small businesses pay too much for software

I feel compelled to answer some of the issues raised in Doug Ruttan's article "Illegal copying still a problem" (March 1994).

Firstly, there is the question of the average cost of PC application programs, which Mr Ruttan somewhat condescendingly starts at \$200, but allows us a "generous" \$300. Look at the ads in the magazine Mr Ruttan! I calculate a figure closer to \$500, or somewhere 66 per cent higher than Mr Ruttan's figure.

Mr Ruttan then goes on to presume that a SOHO setup will only require one package to operate. Can he really suggest that a business could survive with just a spreadsheet, or just a word processor? Perhaps they could get by just with a database?

In my experience any business is likely to require somewhere in the order of 4 or 5 such packages, so the likely cost in software for a business just setting up is closer to \$2,500 not the \$300 he suggests.

This also ignores the fact that if you are in an industry which requires specialist packages, the likely cost of those packages is going to be in the order of \$5,000 plus.

He then goes on to suggest that \$300 is "the cost of one good business lunch". Well Mr Ruttan, I obviously move in the wrong circles, because there is no way that my business could afford to waste \$300 on one lunch, however good it was. Of course, I expect that the more realistic figure of \$2,500 for business software costs would buy Mr Ruttan a lunch he could really enjoy.

Mr Ruttan has also neglected to mention the other "hidden" cost of software ownership these days — the continuous upgrade. With upgrades costing something in the region of \$150 each, our five packages are going to cost the average small business about \$750 per year to upgrade.

No Mr Ruttan, the answer to software piracy in this country does not lie in comparisons to the cost of a business lunch, or the jack-boot tactics of the BSAA in trying to enforce software ownership.

It lies with more realistic pricing and support policies by the software vendors. It also lies with a realisation by those same vendors that small business in Australia is still hurting from

the recession we had to have, that profits are still tight, and that we do not have unlimited budgets to spend on software (or hardware for that matter).

I must have blinked when Microsoft introduced user pays software support, because I sure as hell missed the drop in the prices of their software to compensate for the extra cost small business users like myself have to bear for support now.

How about some real innovation in software pricing, like \$20 home licences for copies of packages used in the office? Or even realistically priced packages to begin with? Multiple site licences (at less than extortion prices) would also be welcome.

Perhaps reduced price packages with zero (or full user pays) support could be given a run — Microsoft only got part of the way there with their recent change in policy.

Maybe even something really innovative — like pricing based on the ability of the company to pay, and the amount of use that the package is likely to get. After all, I get a much lesser benefit from the purchase of Excel (which I use four or five times a week) than an accountant in a multi-million dollar bank who would most likely use it eight hours a day, five days a week. Yet due to the purchasing power of the bank they are most likely to have paid less than half what I have, to purchase the same package.

Are you still wondering, Mr Ruttan, why some users illegally copy packages when instead they could pay apparently inflated prices, only to see another user pay half what they have been forced to pay?

And don't insult me with the answer about increased distribution and support costs — we all know the real facts about software support in Australia.

And let us not forget the recent Prices Surveillance Authority investigation which found that software prices in Australia are substantially higher than they should be.

This challenge has already been taken on by some of the small (and predominantly Australian) developers and vendors who have realised that there is a real world out there, and that innovative product with imaginative selling and pricing regimes can survive (and even prosper).

Perhaps Mr Ruttan, it is time that you got out into the real world and looked at the real problems facing SOHO users and did something to convince your mates in the software industry to support small business in Australia, instead of berating us again for not paying artificially inflated software prices.

— David Chatwin ▷

Misleading cover?

Much to my delight I spotted your December/January 1994 edition with the front cover showing "Your portable office 11 notebooks tested" and a picture of a notebook which looked as though it had a mono screen.

I intend purchasing a notebook computer within the next two months. Here I saw an excellent opportunity to evaluate the choices as presented by your publication. I intend spending between \$3,000 to \$6,000 and have been looking at mono screens.

So you can imagine my dismay when I come to page 2 of your publication to find your article is renamed from the front cover to "486 Colour Notebooks".

Because your publication was sealed in plastic I had no way of checking your cover statements. I took your cover on trust and lost. For me a donation to your magazine of \$5, but no doubt I am not the only one who would have been misled by your cover presentation.

I would like you to consider two options in the future, firstly to ensure the front cover is a true and honest account of your contents, or secondly, stop sealing your products so that us trusting buyers at least have an opportunity to read your contents rather than trust your front cover.

- Peter Jordan

Focus on the business

I read with interest Stewart Alsop's article "Does anyone really know the meaning of client/server?" in the February 1994 edition of *Australian PC World*. The points of client/server are as many as the stars within the milky way, except for one.

Many companies have legacy systems in which they have a large investment, and which still support the base business operation. However, these legacy systems are unable to deliver the work empowered information hungry system which today's and tomorrow's workforce need. Customer focus, streamlined workforce, re-engineered workflows, and that wonderful, colourful easy to use PC front end built to service the customer, are the environment of client/server. Client/server is the way of satisfying the actual business need, providing the IT working tool to encourage a better customer service and to increase our workforce pro-

ductivity. For those wishing to expand sales of client/server equipment, software or services, focus on the business.

- Cameron Clark

Offensive ad

I am writing to complain about the advertisement for Pulsar Technics on page 255 of the February issue of *PC World*. This advertisement offers products under the heading of XXX CDs, which are presumably pornographic, or at the very least, unsavoury in nature.

I strongly object to the production and distribution of such material and implore you not to allow your magazine to be used for the furtherance of this smut.

I greatly enjoy and benefit from your magazine but I certainly won't be renewing my subscription if this sort of material continues to be included.

- R. Darlston

It is our policy not to impose censorship unless the material is blatantly offensive. Readers have the choice, especially in the case of subtle listings such as the above, whether or not they want to read the material.

DR-DOS v MS-DOS

As a casual reader of *Australian PC World* and a few other computer magazines, I am at a loss to understand why there is so much written about MS-DOS, yet there is so little written about DR-DOS.

Now, I know that I may be living in the past, because I use DR-DOS 3.41 on my rather ancient AT clone. I also have MS-DOS 3.30, but after comparing the two operating systems I find that DR-DOS wins hands down, for ease of use, and has some features not found on MS-DOS.

As the previous update releases came out, time and again MS-DOS was playing catch up with DR-DOS, as far as new features were concerned. Yet it is MS-DOS that holds the limelight.

We all know that product excellence is no guarantee for market dominance, and Bill Gates certainly showed a stroke of genius in the way he marketed MS-DOS in the formative years of the PC revolution, much to the detriment of DR-DOS.

I find *Australian PC World* an excellent magazine; please keep up the good work.

- Helmut Bauerle

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Microsoft's mobile mouse

If you spend time on the road, you'll want to take a look at the Microsoft BallPoint Mouse 2.0. Its new design and enhanced software are ideal for computing on the go

Microsoft has made several hardware changes to the BallPoint Mouse. Its large sculpted buttons fit the hand nicely and can be configured using the accompanying software. The mouse connects to a notebook's mouse port, leaving the serial port free for peripherals. The clip included with the mouse attaches permanently to the side of your notebook keyboard, and the BallPoint Mouse clips on and off easily.

Once the mouse is installed, the tilt can be adjusted to one of six different angles. All you have to do is press the buttons on either side and rotate the mouse until you find the spot that's most comfortable.

The notebook can be closed after the BallPoint Mouse is installed.

To its credit, Microsoft devotes a fair amount of space in the documentation to discussing ergonomics and the importance of finding an angle that's right for you, as well as to making sure that even when you're on the road your setup is comfortable. The documentation even recommends taking regular breaks from typing and offers simple exercises that users can try. The helpful advice

is a welcome addition. The BallPoint Mouse software includes Mouse Manager, a customisation interface that provides a variety of new features for tailoring mouse and cursor functions; the Magnify feature automatically enlarges hard-to-read areas up to 24 points or in a 6in box; the Snap-to option automatically puts the pointer on the default option; the Locate option puts the cursor in the middle of the screen so you can find it easily; and using the new ClickLock feature in conjunction with a third button, you can drag without holding down a button the entire time.

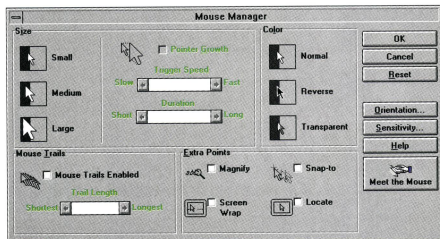
— Roberta Furger

BallPoint Mouse 2.0

A new ergonomic design, lots of customisation options, and other extras make notebook navigation a little easier.

Price: \$199 (ex tax)

Microsoft
Phone: (02) 870 2100
Fax: (02) 805 1108



You can reduce mouse movements with Mouse Manager's Snap-to feature and modify your cursor with the Transparent and Size functions

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Another Australian success story

This data manager gets you what you point at

The free-form text retrieval system ISYS has been so successful in its DOS form that it has become undisputed leader of its field — to the point where its incredibly fast and efficient search engine is being licensed to American database firms.

Notice that I'm not calling it a database. This is an important distinction to bear in mind: a database consists of a file or set of files in a designated format, into which data is entered through an entry form and indexed for searching.

And ISYS? It does the indexing and searching, all right, but you don't have to enter any data. Instead, you just tell ISYS "I want a handle on all text files in such-and-such directories on such-and-such drives". You get to designate the file types, too, although ISYS has built-in smarts and doesn't just look at the file type designated by the name; if you specify ASCII text files, it will index any files that contain text, such as .INI.

Databases are a dime a dozen, but ISYS has little competition because of the way it works. It's ideal for people like us, for example: we often get queries like "have you reviewed MathCAD and if so,

when?" and it's marvellous to be able to search for "file containing the words MathCAD and Review". With all files from a particular issue in a directory named for the issue date, the query is answered in the proverbial trice (will be, anyway, once we have built up a bit of a collection with our newly installed ISYS).

I have to acknowledge here that you can do a simple search using Norton's or Central Point's version of File Manager, for example (or, for that matter, the DOS 6 utility FIND). However, the search can only be for a single text string, not a positional combination, and it takes something like 10 times as long.

To give you a rough idea of ISYS's performance, I told it to index a small database of 212 files and 5Mb (which is a lot of text). This took 6 minutes and 20 seconds, and produced a set of index files of nearly 1.35Mb.

Searching for the single word **memory** took 1.2 seconds and raised 641 hits. Searching for "**database** and **486**" also took 1.2 seconds and raised 205 hits. Searching for "**virus** and **scan** within the same paragraph and followed by **delete**" took 1.2 seconds for 120 hits, so the search time seems

to depend only on the database size. You can set up much more complex queries than that, using AND, OR and NOT as well as specifying locations in word and paragraph terms.

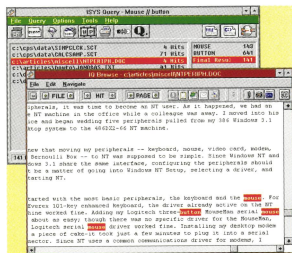
Why Windows?

The user interface of the DOS version has become very good and is in fact one of those few products where going to Windows has mainly added good looks to what already was excellent functionality. Oh sure, setup procedures and so on have benefited from Windows list boxes, but actually querying the database is downright familiar to an ISYS/DOS user.

The main benefit ISYS gains from coming to Windows is multitasking. Not, I hasten to add, in the search phase; the astonishingly fast ISYS search engine doesn't need to do its deeds hidden in the background but comes back with its haul of "hits" long before the user even thinks of it as waiting. No, where multitasking comes in, is in the indexing process. It has in the past been one of the restrictions of ISYS that very large databases needed to be indexed at night when a separate DOS machine couldn't be spared for some hours.

Under Windows — and using a reasonably powerful PC, I hasten to add — all this can take place in the background while the user is happily working away at something else. Of course the task takes longer in the background, but that is no problem as you can keep right on doing queries while the database is being indexed. On a network, ISYS can handle several queries while indexing or updating is proceeding.

— Jan Wikström



ISYS has its own display program, which works with a large number of formats, but can also be set to activate whatever word processor or text editor you happen to use

ISYS 3.1

Price: \$525 stand-alone,
\$995 2-user network

Odyssey Development
Phone: (02) 439 5800



Alloy takes off with Eagle

Alloy Computer Products (Australia) and Eagle Systems of Victoria are proud to announce an agreement whereby Alloy will distribute the Eagle range of Network Interface Cards.

Alloy Computer Products (Australia) Pty. Ltd. has been operating from its Melbourne base as Manufacturers, Importers and Wholesalers of Tape Backup and Networking Products since 1985. Eagle Systems commenced operations in 1987 as a designer and manufacturer of quality computer components, serving both the Australian and International markets.

Alloy will enhance its extensive range of quality networking hardware products, available to its Australian, New Zealand and Asia-Pacific Dealership Network, with the addition of Eagle's suite of high-performance NFX4 Network Interface Cards. The NFX4 range comprises 10Base-2, 10Base-T and 3-in-1 NE2100 Type NIC's. In addition, the LAN-2000C NE2000 type card is also available. All these products are 100% Australian Manufactured by Eagle.

The NFX4 range of Network Interface Cards represents products with exceptional levels of performance and reliability at a price competitive with similar products in the field.

The products conform fully to the IEEE 802.3 standards, feature single chip implementation, support Remote Booting for Novell and LAN

Manager and are supplied with a wide range of network operating system software drivers. The cards are covered by a Lifetime Warranty and Novell Certification is pending. The price of these products compares very favourably with leading off-shore brands.

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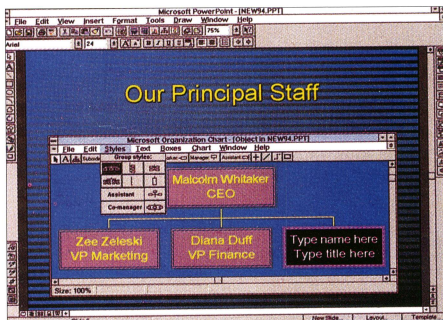
For more information phone Alloy on (03) 574 9891

Alloy's Australian Made Network Interface Cards

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PowerPoint upgrade has automated features

Greater ease of use, enhanced features and tighter integration with Microsoft's Excel 5.0 and Word for Windows 6.0 makes PowerPoint 4.0 more competitive than ever



PowerPoint's organisation chart module automates the creation and editing of org charts

For most presenters, the hardest task in producing a presentation is developing the content: deciding what to say and how to structure it. To help you jump-start a presentation, PowerPoint offers two new Wizards (interactive guides) that assemble a custom presentation after prompting you to fill in a few blanks and select choices from lists.

These and other ease-of-use improvements speed you through the presentation creation process, to help overcome the second-hardest task in producing a presentation: getting it done at the last minute.

Working with a pre-release version of PowerPoint 4.0, I used the new AutoContent Wizard to create an outline for a presentation. The Wizard automatically included sample titles (such as "Our Objective") and bulleted lists. I similarly used the

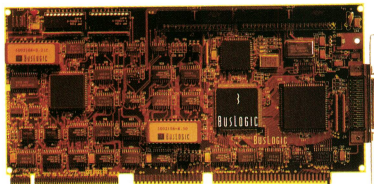
new Pick A Look Wizard to walk through the steps of selecting the proper format for my slides, handouts and notes.

While most presentation programs do a fine job of turning an existing outline into colourful slides, screen shows and handouts, PowerPoint 4.0 is now the best choice for novices or professionals who want more help in creating the content as well as the look of their next presentation.

Automated tips

Other ease of use improvements include more floating and customisable tool bars and ToolTips (pop-up descriptions) for specific tasks, right mouse button shortcuts, a vertical scroll bar to move to a specific slide, an interactive status bar and new buttons to quickly add slides or ➤

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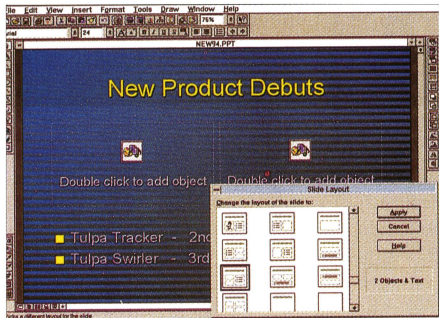
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Changing a layout is easy thanks to PowerPoint's visual gallery of different slide designs

change a layout or template. PowerPoint 4.0 also offers presentation design tips and Cue Cards (similar to Harvard Graphics' on-screen Advisor), which provide step by step instructions for tasks such as adding sound or video clips to a screen show.

Additional PowerPoint 4.0 enhancements include support for multiple documents with drag and drop capabilities between presentations and other applications; improved graphing, including a Chart Wizard and new chart and graph types (just like those in Microsoft Excel).

A larger 1,100 image clip art gallery and more flexible colour con-

trols make it easier, for example, to recolour scanned images or clip art to match a colour scheme on a slide.

PowerPoint also has a spiffy new organisation chart module (a scaled-down version of Org Plus from Banner Blue Software), which provides a gallery of ready-to-go org chart styles that you can easily edit and pop into your presentation.

PowerPoint 4.0 sports better multimedia controls than its predecessor does, thanks to the bundled Microsoft Media Player.

However, PowerPoint 4.0's multimedia features still aren't as impressive as the ones provided by Asymetrix Compel 1.0A or Micrografix Charisma 4.0, which both offer more media management tools, better file compatibility and sample multimedia clips. Unfortunately, PowerPoint doesn't include a single sample multimedia file.

Tighter integration

Aside from PowerPoint 4.0's improved ease of use, the most compelling reason to choose this presentation package over its competitors is its compatibility with Microsoft's Excel 5.0 and Word 6.0. All three programs now share consistent interfaces, tool bars and other features.

PowerPoint 4.0's full support for OLE 2.0 and tighter integration with Excel and Word make it easier than ever to share data and switch between these products.

For example, using OLE 2.0 visual editing, you can insert a table in PowerPoint and then edit it using Word's more powerful table polishing features — without having to leave PowerPoint.

You can click PowerPoint's Report It button to launch Word 6.0 automatically and create a word processing document from a PowerPoint outline, or conversely click Word's Present It button to launch PowerPoint and create a presentation from a Word outline.

This strong degree of integration should make the Microsoft Office 4.2 suite, which includes all three packages, irresistible to corporate buyers and individual users who want to standardise on a single software solution.

But, even if you don't use Microsoft Word or Excel, PowerPoint 4.0's ease of use and improved and enhanced features make it as good a choice as any for an all-round presentation package — especially for first-time presenters who want an easy, painless path to the podium.

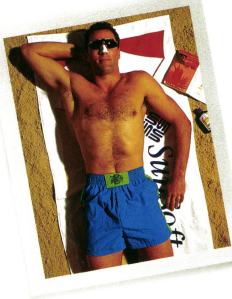
— Richard Jantz

PowerPoint 4.0 for Windows

Business presentation graphics package with new automated features, including Wizards and Cue Cards. It supports OLE 2.0, and has tighter integration with Microsoft's Excel and Word for Windows
Price: \$695

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This is how *Solaris* network administrators will be flat out this summer.



Until now, running a large PC network has kept system administrators working flat out. The instability of PC software, the lack of security, the time-consuming tasks of installing upgrades one machine at a time, as well as the sheer cost and complexity of connecting PCs to wide area networks which include UNIX or mainframe systems has caused headaches to everyone concerned.



That's where Solaris® comes in. As the standard operating system for Sun SPARC stations, Solaris is already the world's leading Unix® operating system. Now Solaris runs on industry-standard PCs, integrating easily into enterprise-wide networks without any additional software.

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NetWare tries to get Personal

A simple peer-to-peer operating system that proves to be true NetWare: unfriendly

Every PC software vendor has had at least one disastrous product. In Novell's case it was the much maligned NetWare Lite, the company's first foray into the peer-to-peer network operating system (NOS) market. Hoping not to get struck by lightning twice, Novell is trying again with Personal NetWare, a product that's typically NetWare: not especially user friendly, but fast, flexible, and thoroughly integrated with Novell's more powerful NOSes.

It's not the best choice for small businesses that want quick and painless printer sharing — Microsoft's Windows for Workgroups and Artisoft's LANtastic are better alternatives — but it will interest NetWare administrators forced to accept peer-to-peer networking for their small departments.

For a relatively simple peer-to-peer operating system, Personal NetWare has some distinctive features, including a Simple Network Management Protocol (SNMP) agent and compatibility with Novell's NetWare Management System. It has password encryption and disk caching for better security and performance. It also provides the same comprehensive network statistics you get with Novell's more powerful operating systems.

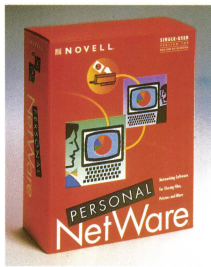
But Personal NetWare's two best features are its integration with NetWare 3.x and 4.x networks and its centralised management. Taking a tip from NetWare 4, Personal NetWare lets you log in to all peer-to-peer servers on the network at once and manage all users, servers, and shared resources from a single workstation

— a level of administrative control that has been missing in most peer-to-peer operating systems. It also uses the same NetWare VLM (Virtual Loadable Module) network interface card (NIC) drivers as the other versions of NetWare, which means that you can connect to peer-to-peer servers and dedicated servers with the same set of drivers.

Unfortunately, Novell's newest NOS also has a few bad habits — namely a somewhat erratic setup and less-than-intuitive management windows. Personal NetWare has DOS and Windows management utilities, but in the Windows version, setting up shared directories is not nearly as easy as in Microsoft's Windows for Workgroups.

The most frustrating problem I had with Personal NetWare was simply connecting two workstations. It took nearly two days, several re-installations, and numerous setup changes before I had a functional workgroup. One of the first obstacles centered on the standard Achilles' heel of networks — NIC drivers. Personal NetWare includes drivers for a number of common NICs. During installation, it looks at an .INS file (eg. 3C503.INS) that contains information for your specific card. If the program cannot find the file, it will not install the card. I had .INS files for two of my Xircom adaptors, but not for the 3C507 card in my Northgate 386 desktop system. The README files for Personal NetWare offer a way around this problem, but it did not work on my system.

Eventually, I connected two of my notebook computers, but it was



still far from quick and easy. Beyond the NIC drivers problem, there was a chain of perplexing and frequently undetectable failures. By default, Personal NetWare enables its DOS Protected Mode Services (DPMS). However, DPMS inexplicably locked up my 486 IBM ThinkPad. In other cases, everything appeared to be set up right but the two machines simply would not communicate. The fact that I was finally able to link two machines seemed more a matter of luck than of following the proper setup procedures.

If you are integrating Personal NetWare with an existing NetWare 3.x or 4.x network, the setup becomes even more complicated. Personal NetWare makes some changes to your AUTOEXEC.BAT file, but you will have to make other changes of your own.

Continued page 69

Personal NetWare

A simple peer-to-peer network operating system

Pros: Fast, flexible, good integration

Cons: Not user friendly

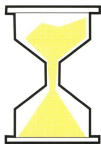
Price: \$190 per user; \$750 for a five-user pack

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IMAGE RENDERING TIME (AVERAGE IN SECONDS)

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Lower numbers indicate faster performance. Test results as published in BYTE (US) Magazine February 1994.

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AUSTRALIAN PERSONAL COMPUTER OCT. 1993.

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Lotus Notes now runs on NetWare servers

The new NetWare Loadable Module is stable, functionally similar to the OS/2 server version, and is easy to install

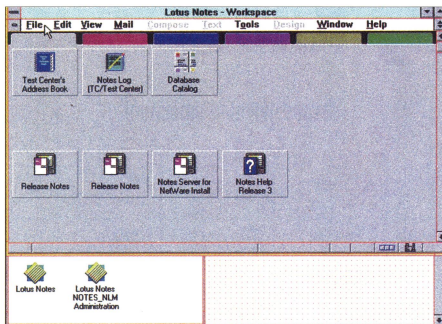
Many NetWare administrators have a love-hate relationship with Lotus Notes, the quintessential client/server groupware application, in part because it runs on an IBM OS/2 server.

Based on our tests, it now looks like NetWare administrators will soon have another choice — and maybe a better one. The beta version of Lotus Development's Notes for NetWare we looked at was easy to install, stable, and functionally a twin of our current Version 3.0 running on OS/2.

Administrators working with the OS/2 version of Notes have the unenviable chore of managing two very different operating systems on the same LAN. You can't really fault Lotus for its choice; from the start, Notes required a multitasking server OS, and at the time OS/2 was the best choice.

There are, however, a few administrative changes for users of the NetWare version — a NetWare Loadable Module (NLM) that runs on NetWare 3.11 and 3.12 servers. Most of these changes are due to the limitations of working on a NetWare server console. And there are several missing key ingredients. But overall it seems that Lotus has managed a seamless port.

What is currently missing from Notes for NetWare is NetWare 4,



Users of the OS/2 version of Lotus Notes will be in familiar territory when they open Notes for NetWare

NetBIOS, and AppleTalk support. A future version will support NetWare 4.1, and the lack of NetBIOS support is a limitation of NetWare, according to Lotus. NetBIOS is used by a number of network applications, including the OS/2 version of Notes. So if you want to integrate a Notes for NetWare server with the Notes servers you already have, you may have to convert your OS/2 Notes server or your clients to NetWare SPX.

AppleTalk support may be in the shipping version, or it may follow shortly after Notes for NetWare's release.

Setting up

Setting up Notes for NetWare was relatively easy. As with the OS/2 version, you start by setting up the

server — a NetWare 3.12 server in our case. Lotus recommends fairly typical hardware for a NetWare server: an Intel 486 or compatible PC with a 300Mb hard drive and 24Mb to 48Mb of memory, depending on the number of clients. (The OS/2 version recommends 16Mb).

If you are a NetWare administrator already proficient at installing OS/2, setting up Notes for NetWare takes about the same amount of time. How you install Notes is where the two versions part ways. On an OS/2 server, you install Notes right at the server. NetWare, however, requires a Notes installation from a Windows workstation. In fact, we had to install new Notes client software — Release 3.0F — on our workstation (or a public directory on our server) before we could install the server files.

Fortunately you do not have to upgrade all Notes users; the older client software already on our workstations worked fine with the new server.

When the installation was complete, we ended up with two Windows icons on our workstation: a typical Lotus Notes client icon and a Lotus Notes NLM Administration icon. The latter is used for basic setup functions, such as setting ports and initialising the first user ID. If you try to open a Notes database through the NLM Administration, however, you get an error message; to use NLM Administration, you have to bring down the Notes server, an inconvenience not required by the OS/2 version of Notes. But you should rarely need to use NLM Administration after the initial setup.

Once Notes is installed you find that many of the basic commands are nearly identical between the NetWare server console and OS/2's text-based command window. A few minor exceptions are dictated by NetWare.

For example, the OS/2 version's "Show Diskspace drive" is "Show Diskspace volume" in the NetWare version. Day-to-day administration is also handled somewhat differently in Notes for NetWare.

The OS/2 version lets you administer Notes from either the

server or a workstation. NetWare servers, however, do not have a GUI interface at the server console, so you must do most of the day-to-day administration from a workstation. This is not a big problem, but it is a change for those Notes managers who like to work at the server. The bottom line is that anyone familiar with managing Notes for OS/2 will have no difficulty managing Notes for NetWare. Like the OS/2 version,

Notes for NetWare

A NetWare Loadable Module that is an alternative to the original OS/2 server version of Notes
Price: \$795 per server

Lotus Development
 Phone: (02) 350 7700
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Notes for NetWare had hierarchical naming. The addressing scheme follows NetWare 4's, suggesting that the two products may be able to share directory services in the future.

Significantly slower

Our initial tests of Notes for NetWare versus Notes for OS/2 show a marked difference in speed. We tested both versions on similar 486 servers, and Notes for NetWare

was significantly slower. To reindex a 6,400-record database, Notes for NetWare took 4 minutes and 48 seconds. Copying a 384K database, Notes for NetWare was a bit faster: 14 seconds versus 19 seconds.

There was a turnaround, however, when we copied one database and indexed another at the same time. Notes for NetWare took 4 minutes and 56 seconds versus just 20 seconds for the OS/2 version. All of these performance numbers must be taken with a large grain of salt. Beta products often include a lot of debugging code, which slows performance, and tuning is often left until just before a product ships.

There are differences between NetWare and OS/2 that will affect performance, especially in a product such as Notes. OS/2 is a better multitasking operating system than NetWare, which means it is probably more adept at handling modems and remote clients. NetWare has a better file system and more efficient caching.

NetWare shops will also have a wider choice of network interface card drivers and disk controllers. If Notes for NetWare is to be a viable alternative to the OS/2 version, the final shipping product must have better speed, solid remote client support, and support for AppleTalk.

— Tracey Capen & Rodney Gallie

Personal NetWare

From page 66

Personal NetWare's DOS and Windows management applications work, but the various commands and options are not intuitive, even to a long-time NetWare user. There are two DOS management applications: Workgroup Administration and NetWare User.

Workgroup Administration displays a list of servers within the workgroup, detailing whether they are available for use and whether they are on the local machine or on some other PC on the network. Although text-based, the utility has pull-down menus and Alt key com-

binations, making it relatively easy to use. Workgroup Administration is also where you set up users, shared directories, printers and workgroups.

You use the NetWare User utility to log in to dedicated servers and Personal NetWare workgroups and to map your network drives. The structure and commands of this program are a bit odd. It starts out with a list of all workgroups and dedicated NetWare servers on the network and tells whether you are logged into each one. To log on to a particular server, you highlight it and select the Connect command. NetWare User then prompts for your name and password. So far, so good.

If, however, you highlight a server and pick the Properties com-

mand, you get a dialogue box that lets you change your password — not exactly what I would have expected.

Personal NetWare's Windows management utility combines the functions of the two DOS applications into one. Unfortunately, it appears that Novell's DOS and Windows programmers were on different planets; there is little in common between the two interfaces. This means that once you become proficient with the DOS application, you will have to virtually start over learning the Windows version.

Personal NetWare sells for \$190 per user and \$750 for a five-user pack.

— Tracey Capen



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Building the future of Windows

DOS as we knew it is finally replaced by a 32-bit operating system that puts an end to installation nightmares and offers pre-emptive multitasking

BY SCOTT SPANBAUER

JEFF BERLIN



The Windows of tomorrow exists today as a series of components — technology building blocks — waiting to be assembled. Which blocks are used and how they fit together will determine the final product that today is known only as the Chicago Project.

"Chicago is not a product," declares Windows product manager Jeff Thiel. "It's a set of technologies, and we haven't even decided how we're going to put them together into products for customers."

But a look at Microsoft's initial efforts at assembling these technologies reveals a Macintosh- and OS/2-like interface. Will the next version of Windows, due in the second half of the year, look or act anything like these pre-beta releases? Microsoft officials say it's too soon to tell.

According to Brad Chase, general manager of Microsoft's Personal System's Group, the preliminary Chicago Project versions are test releases — trial balloons that contain some fairly solid underlying technology and a user interface that's as changeable as the weather.

Nevertheless, Chase and Thiel have plenty to say about the project's foundation technologies: a 32-bit preemptive multitasking operating system kernel; almost complete support for the Win32 application programming interface; a simpler, more consistent interface for programs, files, and other system resources; improved networking and communications; and support for Plug and Play hardware. Whatever the specific interface turns out to be, these core features add up to a compelling Windows upgrade for power users and novices alike that offers better performance, more reliable multitasking, and streamlined hardware setup, system configuration, and networking.

More than just Window dressing

Plug and Play tops Thiel's list of Chicago's revolutionary technolo-

gies, and it's destined to make computing dramatically easier.

In fact, Brad Silverberg, vice-president of Microsoft's personal systems group, has instructed his staff to think of the product as being developed for his mother, who is intimidated by PCs.

Devised by a consortium of PC industry vendors, including Microsoft, Intel, and Compaq, Plug and Play architecture will end hardware installation and configuration nightmares.

Currently, installing network, SCSI, audio, and other adaptors means reconciling DMA-channel and IRQ conflicts through a frustrating process of trial and error. The combination of a Plug and Play-compliant

ate drivers, adjust video display resolution, and moderate among the PC, operating system, applications, and user. Ultimately, mobile Plug and Play computers will be able to sense the presence of wireless peripherals and networks and reconfigure themselves on the fly.

For example, a user who walks into a conference equipped with an infra-red-interface printer might see the printer appear automatically as a Windows icon on screen.

In addition to making PC hardware easier to live with, Chicago portends a simpler Windows interface. Although Thiel won't say what specific tools will appear in a shipping product, he says the current File, Program, and Print Managers, along

Chicago's 32-bit operating system core makes running apps easier, faster and more reliable

PC, peripherals, BIOS, and operating system could make such installations as easy as changing a light bulb — or adding a peripheral to a Mac. Thiel says Plug and Play is being extended to a wide range of buses and device interfaces, including Micro Channel, PCI, VL-bus, SCSI, and even infra-red links.

Plug and Play's broad scope implies even more dramatic benefits, particularly for mobile-computer users, according to Thiel. One of the key features of Plug and Play is dynamic configuration, which will allow you to connect or remove peripherals such as PCMCIA cards and docking stations without powering down or rebooting the system. The operating system will also sense the change in the hardware configuration, load or unload the appropri-

with the Control Panel, will be combined into a unified resource manager. The inclusion of OLE 2.0 and its systemwide support for drag-and-drop actions suggests that many tasks that currently require users to select menu commands or type text into dialogue boxes will become click-and-drag affairs.

And like Windows NT, OS/2, and the Macintosh operating system, Chicago will support long, descriptive file names.

Thiel also promises innovations that will make multitasking easier to deal with: "We've witnessed typical Windows users as well as new computer users grappling with that in useability testing and have worked out some designs that will simplify things," he claims. More than that, Thiel won't say. ▶

Solid, but not far out

While all these innovations make it easier for you and your PC to interact with new hardware, Chicago's 32-bit operating system core makes running apps easier, faster, and more reliable. Like Windows NT, the operating system kernel obviates a separate DOS operating system. It marks the end of hand-editing and tweaking configuration files like CONFIG.SYS and AUTOEXEC.BAT, then rebooting, to modify system setup.

The new operating system replaces DOS's segmented-memory design with protected-mode processing that explodes the 640K limit, boosts the performance of applications, and simplifies software development.

Unlike NT, Chicago's underlying operating system should run any existing DOS or Windows device driver or application, with the exception of enhancements or replacements to Windows 3.1's moribund Program and File Managers — bad news for utility vendors. Taking

another page from the NT book, Chicago pre-emptively multitasks applications; this means the operating system, not the application, decides how best to divide processing power.

Like NT, Chicago isolates the memory used by one application from that used by others or by the operating system.

Those two capabilities provide more reliable background processing for sensitive real-time applications like fax, and near-complete protection from poorly written applications and drivers that can crash Windows 3.1.

Chicago won't support symmetric multiprocessing or C-2-level security, and it won't be portable to other processor platforms like MIPS or the PowerPC.

There should be no shortage of applications for Chicago. Included among the technology building blocks is support for all but a few Win32 APIs, so programmers can write a single 32-bit application that

will run under both Chicago and Windows NT. To keep Chicago from developing NT's memory appetite — NT requires at least 12Mb — Thiel says developers can stick with 16-bit code for those portions that have little effect on performance, such as the User module, which handles window management, and portions of the Graphics Device Interface. System resource limitations, the bane of current Windows power users, disappear in Chicago, thanks mostly to the use of 32-bit code.

Says Thiel, "Like everything else, 32-bit has some benefits and some costs. What we've done is look through the system and identify areas where applications can benefit most from 32-bit code, and where the biggest problems are with respect to compatibility and size."

The result: Chicago requires 4Mb and a 386 processor and should run existing Windows applications at least as fast as a 4Mb Windows 3.1 system. Chicago won't run on systems with less memory.

Building Chicago

As the successor to Windows 3.1 enters beta testing, Microsoft unrolls the schematics for a future operating system.

Ease of use

- Plug and Play architecture support
- Simplified hardware installation
- On-the-fly device reconfiguration and driver loading and unloading means you can hot-swap devices such as PCMCIA cards and laptop docking stations
- Simplified interface

- Program, File, and Print Managers and other system tools combined into a single drag-and-drop desktop interface
- Interface improved to make task-switching and multitasking easier to understand

Performance

- 32-bit operating system core
- Protected-mode 32-bit flat memory model; no 640K RAM limitation
- Separate memory areas to prevent crashes during multitasking
- Pre-emptive multitasking
- Operating system is integrated with the Windows user interface
- System configuration doesn't require command-line tools or rebooting
- Win32 API support
- Compliant applications can run under both Chicago and Windows NT
- 32-bit and existing 16-bit Windows applications should run as fast as or faster than under Windows 3.1

- System resource limitations that plague Windows 3.1 power users are effectively removed

Connectivity and Networking

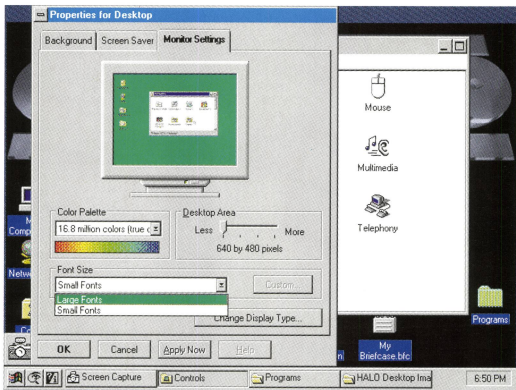
- Faster 32-bit networking integrated into the operating system
- Dynamic loading and unloading of multiple network transport software on demand
- Simplified access to multiple networks through user interface
- Mobile computer support
- Point-to-point remote access between Chicago systems, and between Chicago systems and other Microsoft networks
- File synchronisation utilities and support for document version control
- MAPI (messaging API) 1.0
- Support for workgroup applications

Minimum system requirements

- 386, 4Mb RAM; 8Mb recommended



Not the new Windows look. Or maybe it will be. With this feature you can set resolution on the fly



Opening a Window on the Enterprise

The biggest surprise about Chicago's integrated 32-bit net-working is not that it performs faster and more reliably than most DOS-based peer networks, but that it's essentially already available in Windows for Workgroups 3.11, which provides much of the protected-mode networking technology used in the Chicago Project.

Both systems offer a benefit system administrators are dying for: the ability to run multiple network transports and LAN adaptor drivers.

"If you wanted to be able to connect to NetWare servers and NT servers and use TCP/IP, you could have all of these basic popular transports running at the same time," Thiel remarks.

What Chicago adds to existing Windows for Workgroups connectivity, he says, is a simplified, object-oriented interface. "If I have multiple servers I'm interested in connecting to, Chicago's user inter-

face lets me browse those," says Thiel. "If I click on the server, it shows me what shares are there, and if there are printers attached. That will improve things for people working on networks."

Even if you're on the road, Chicago will keep you in touch. You'll be able to dial into your desktop Chicago system or a Windows NT server to access files and network resources, or do the same thing via a serial or infra-red connection.

Once you're linked, a file synchronisation utility akin to LapLink will ensure that both computers contain the latest versions of data files.

File synchronisation APIs for applications will support data merging when the original version of the file has also changed in the interim.

Finally, the built-in MAPI (messaging API) 1.0 provides system-wide support for workgroup programs and the ability to send messages from within applications.

Work in progress

The building blocks that will be used to make Chicago into a product sound — and look — impressive.

The company's challenge: with 50 million Windows users Microsoft must balance the need to provide compelling new features with support for a huge and varied installed base.

But that's technology. Now comes the artistry of software development.

How Microsoft uses these elements to design an easy-to-use, attractive environment will also determine Chicago's success.

Whether Chicago becomes Windows 4.0, Windows for Workgroups 4.0, or something completely different is anyone's guess.

"There's no box, or boxes, that we've decided on at this point," says Thiel. "We just think of it as this technology project."

The beta version is available now and the first release is expected within the next 12 months. ▶

A tale of three cities

Chicago isn't the only revolutionary version of Windows that Microsoft has in store for PCs. Upgrades to Windows NT, due both this year and next, will make the workstation and server operating system sleeker, incorporate interface innovations from Chicago, and add 3-D graphics and other advanced features.

Microsoft has also been busy improving its core desktop versions of Windows, delivering late last year a significant upgrade to Windows for Workgroups in version 3.11. With 32-bit networking that frees up scarce conventional memory by moving network drivers and protocols into extended memory, the upgrade is a must for Windows for Workgroups 3.1 users. It's also not a bad move for stand-alone Windows users, who can benefit from the environment's 32-bit file access, which bypasses ROM-based system BIOS for dramatically faster file reads and writes. By comparison, the company's similarly titled Windows 3.11, released in January, offers only updated drivers already available through on-line sources.

A slimmed-down version of Windows, which is dubbed WinPad, is also expected to launch by the middle of 1994. Designed for a new class of hand-held systems, the product should make mobile computing easier by means of a rich set of communications and file synchronisation facilities.

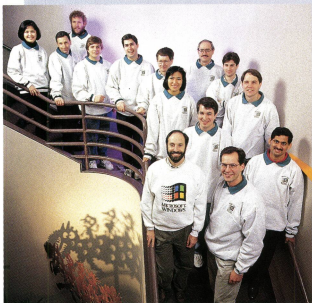
Windows NT users will get an interim upgrade by the middle of 1994 (no version number has been announced, although 3.11 is likely).

This upgrade will slim and accelerate NT's core elements and add new workstation and server capabilities. Code-named Daytona, the revision will optimise operating system, networking, and interface elements for better performance in less memory. A Microsoft source says that Daytona might run in 8Mb (compared to 12Mb for the current version), but the company's principal intention is to improve performance on existing installations rather than attracting new 8Mb users.

Like Chicago, Daytona will offer systemwide drag-and-drop functionality and in-place document editing, thanks to OLE 2.0, and multiple separate pre-emptive 16-bit Windows sessions similar to those currently offered by OS/2 2.1.

Today, Windows NT 3.1 offers only one 16-bit Windows-on-Windows (WOW) session; Windows applications running within the WOW environment multitask co-operatively, making them just as prone to memory errors and slowdowns as they are under Windows. In addition, Daytona will include improved NetWare client software, plus support for 3-D graphics through the included Open GL library, licensed from Silicon Graphics. Windows NT Advanced Server will enjoy new networking tools and a faster print server.

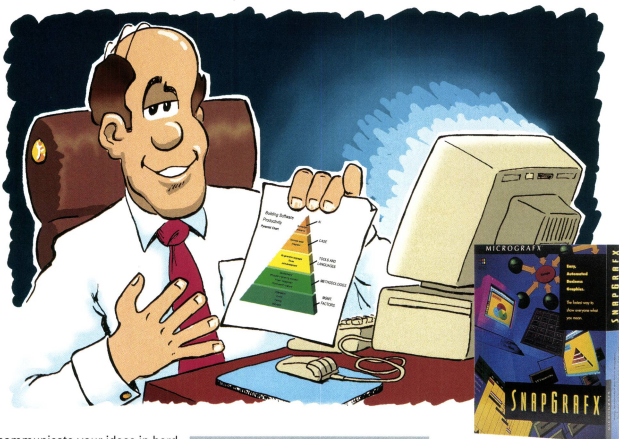
Cairo, a major revision of Windows NT scheduled for release in 1995, will combine Daytona's core technology with Chicago's object-oriented interface and ability to run any 16-bit or 32-bit Windows application. In addition, Cairo will include an object file system and distributed operating system that compete with similar technologies under development by Hewlett-Packard and Sun, as well as application building blocks similar to tools offered by the NextStep OS. ■



*The project people and VP
Brad Silverberg (front left)*

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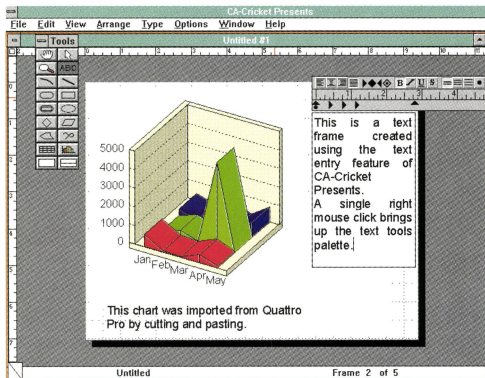
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CA-Cricket Presents is a simple presentation package

By Neale Morison

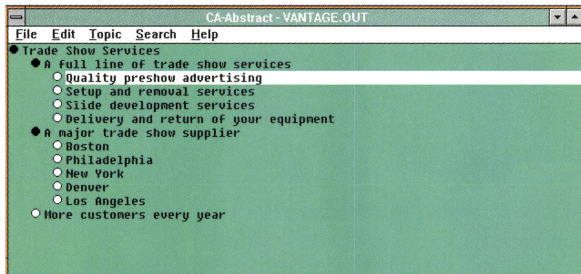
This low-cost Windows software features tools for planning, creating, and viewing presentations



CA-Cricket Presents lets you import charts from other applications using the Windows clipboard, and provides full featured text editing including a spelling checker and thesaurus

There seems to be a universal acceptance of presentation software as the ideal means of communicating on any topic to any audience. While there's absolutely no doubt that it beats hollow using photographic slides, or overhead projector transparencies, one has to call into question the fundamental premise. Sitting in a darkened room in which the only focus of attention is a bright screen on which images, however colourful, slowly merge and dissolve, while a monologue drones in the background, is one of the more soporific experiences in corporate life. Soon some wily entrepreneur will be marketing a system for relieving executive stress by exposing subjects to just such an environment, and flotation tanks will be considered too interesting and distracting by comparison.

The message here is that whatever the features of a presentation system, it can't make up for an unimaginative presentation. The author of the presentation has full responsibility to create something succinct and interesting. What you're looking for are the tools to allow you to do that, and many of



CA-Abstract provides a facility for planning your presentation using an outline paradigm

the features appearing in current presentation software are not directly related to that goal.

So what do you really want from a presentation package? Fundamental requirements include the capacity to display complex graphical information with sufficient colours and clarity.

You need to be able to gather data from as many sources as possible, and you should certainly be able to import graphics, and chart data and text from other Windows applications. You need simple, flexible features for creating, editing, sizing and positioning text and graphics.

Ease of use is a vital consideration. Most users of presentation software will use it rarely and be in a big hurry. When you present, there should be complete and flexible control of presentation order, so you can quickly switch from slide to slide, and alter presentation order on the fly in response to audience requests. Very fancy effects may be distracting, and are largely unnecessary unless they serve the important function of breaking into your audience's solo meditations.

Priced at the low end

CA-Cricket Presents is an integrated presentation package pitched specifically at creating presentations. While you can create presentations in many

graphical packages, and even in spreadsheets, CA-Cricket Presents is a focused product, and its price of \$195 places it at the low end of presentation and graphics packages. There are tools for managing not only the slide show part of a presentation, but also hard copy handouts to the audience and the notes to which the speaker refers.

To accommodate this the package uses four views, in which the different aspects of the presentation can be designed. The frame view shows the slides themselves, the background view shows elements that form the background of every slide, the notes view shows a thumbnail picture of each slide, with a space to enter speaker's notes, and the hand-out view is for designing handouts, with space for arranging up to four slides on a printed page.

You can plan your presentation before you start with CA-Abstract, an outline viewer. You can use the Windows clipboard to copy an outline into CA-Cricket Presents, which automatically generates a bullet list slide for each topic in the outline. The Auto Presents facility synchronises smoothly with CA-Abstract to produce an entire presentation composed of those lethally boring bullet lists (which many presenters seem to feel convey meaningful information, but which in the most generous inter-

pretation serve only as lecture notes for the speaker).

Useful templates can hold commonly used background graphics and text, as well as common formatting. CA-Cricket Presents comes with a quantity of clip art, imported through the Get Template option, and the package bundles Clip-Art Connection, from Connect Software, a dial-in clip art bulletin board system that will be of limited use to users outside the US.

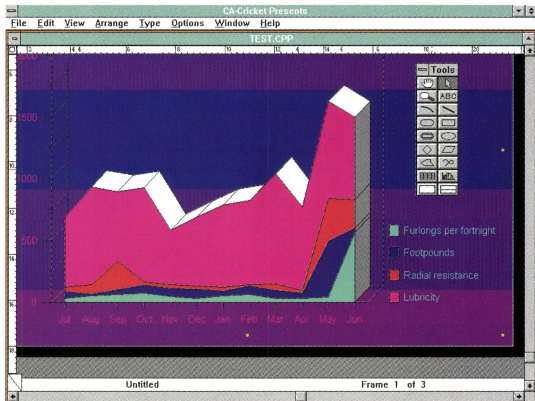
There's also a disk with a few GIF files on it advertising Screen-Maker, a supplier of clip art and background graphics.

Creating charts

Charting capabilities are somewhat more primitive than those available in many top-of-the-line Windows spreadsheets, but you can still create attractive and meaningful charts. To create a chart you select the graph icon on the toolbox, and drop it on the slide.

Double-clicking on a graph brings up the graph attributes dialogue, in which you can select from graph types including scatter, line, area, pie, column, bar, stacked column and stacked bar.

You can tick a 3-D check box to get a 3-D effect. You enter data by selecting an icon, which brings up an editor in a simple spreadsheet ▶



The charting facilities let you create an attractive, meaningful chart, with a little extra effort if you want colour

format. Graphs default to black on white background, and to create a coloured graph you have to individually select the labels and markers icons in the graph attributes dialogue.

To create a graph using imported data you select import from the file menu, specify the file, and then indicate whether you want to create a graph, a table or a text box. You can import data from a text file, a DIF, Syk (SLK) or Lotus (WKS) file; or an ASCII file if data is delimited by tabs. There's a built-in spelling checker and a thesaurus, very useful for ensuring the accuracy of your text. You can import text from ASCII text files (TXT), and Lotus 1-2-3 spreadsheet files (WKS), as well as by using the Windows clipboard.

To drop in a text frame you select the toolbox text icon and drop it on the frame. Right-click on it to edit the text and text attributes. A text toolbar appears. Some text attributes, such as colour and font, have to be selected separately from the menu.

Ease of use

The interface is quite consistent, and follows recent trends in Windows software. There's some use of drag and drop in the slide sequencing dialogue, and you can right mouse click on many objects to bring up an editor dialogue. If that doesn't work, you can try double-clicking on them. If that doesn't work, <Ctrl>E seems to be a common editing hot key. Otherwise, the answer will be in the menus. There are no great difficulties in working out how to use the software, with little reference to the manual or on-screen help, both of which are thorough and clear.

The zoom feature is simple and easy to use. There's a magnifying glass icon on the tool palette. You select it, point to the area of the frame you want, and click the left mouse button to zoom in or the right mouse button to zoom out.

CA-Cricket Presents supports palettes of 256 colours by dithering. There's a capacity for creating and saving an unlimited number of colour palettes.

However, that doesn't mean you can paste 256 colour pictures in and see them displayed in all their colours. CA-Cricket Presents automatically dithers pictures to fit them into its available palette colours.

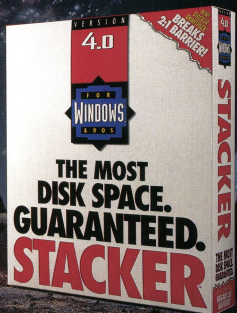
CA-Cricket Presents imports graphics files of the formats Targa, Tagged Image File Format (TIF), and Windows Metafile (WMF). It also supports JPEG (Joint Photographic Experts Group), Targa and bitmap (BMP) files, and Windows and OS/2 formats.

You can also paste bitmaps or pictures from other Windows applications. For example, you can create a chart using Quattro Pro's charting features and drop it into a CA-Cricket Presents frame. The toolbox provides a range of drawing tools, with ellipses, rectangles, lines and curves.

Slides showing now

To run the slide show you first sequence the slides, using the sequence by title or sequence by image facility, then use Video ▶

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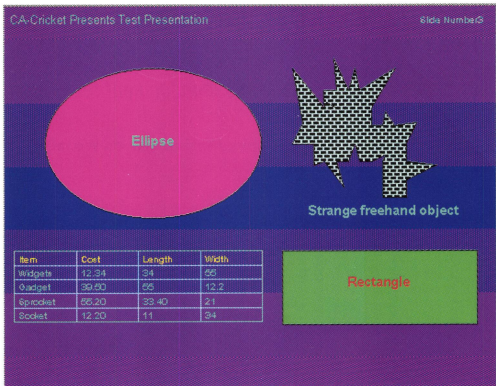
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Presents, a simple utility which you can call from the CA-Presents menus, or independently as a separate program. You can create a show with a few simple selections. You can choose to switch slides on a mouse click or at a specified interval; and you can select a few different transition effects, such as venetian blind, centre out, square to edges, wipe to left, right, or bottom; or randomly appearing squares of different sizes, described in the list as sand, gravel, rocks or boulders. You can't independently control transitions and timing for individual slides.

You move forward in the presentation with the left mouse button, and backward with the right mouse button. The transitions are quick, and it's easy to back up if you have to. The Video Presents files are very large — a simple three slide presentation occupied 1,200K.

Wake up!

What about the big effect that wakes the audience up? If you want to zap your audience with sound and movement, you may need another

presentation package. Unlike the higher end packages, such as Harvard Graphics, CA-Cricket Presents doesn't provide multimedia capabilities, so you can't attach video and sound objects to your presentation. However, the speaker can make some dramatic gesture or emit a loud noise, so always use a human in conjunction with CA-Cricket Presents.

Version 1.5 of CA-Cricket Presents includes CA-Cricket Player, a run time version of Video Presents, allowing slide shows created in CA-Cricket Presents to be displayed without the full presentation package. Registered users of CA-Cricket Presents can distribute CA-Cricket Player free of charge with their presentations.

The new version is also compatible with Adobe Type Manager (Type1), TrueType and Bitstreams' Facelit font technologies. Version 1.5 includes increased memory management, text processor speed and screen redraw speed.

To run CA-Cricket Presents you need a machine capable of running Windows 3.1 or higher, with 2Mb of

RAM and a 20Mb drive or larger, with 4Mb free. Most Windows users will be able to manage that.

CA-Cricket Presents is a simple presentation system, with the features you need for producing a typical corporate presentation. It's ideally suited to producing slide shows in a bullet list format in black and white, but can also handle colour and graphics adequately. For more colour, more control, fancier charting and multimedia you may have to move up into the \$700 and over price range of more sophisticated packages. ■

CA-Cricket Presents 1.5

A low-priced Windows presentation package with basic tools

Pros: Can import charts and other files using the Windows clipboard. Inexpensive

Cons: Lacks multimedia effects, lacks extensive charting capabilities.

Price: \$195, upgrade \$99

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Phone: (02) 923 2066
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Ease of use and strong file management features boost version 3.0

available. (The PKZip executable requires low DOS memory, which can be limited if you are running a number of device drivers, especially if you use a high-resolution, high-colour video card.)

Desktop is a popular and well-liked product, judging from the generally good-natured tone of the complaints on Symantec's CompuServe bulletin board. These concern mainly novice problems and sporadic compatibility difficulties.

Painless installation

Norton Desktop's new installation program is polished and flexible. Users can choose an automatic, interactive, or custom installation. The latter two let you specify which utilities and applications should be installed. Depending on the choices, your setup may require as little as 5Mb or as much as 16Mb of hard disk space. The installation program even offers to run a virus check on your hard drive before installation.

The setup routine prompts you to create a Rescue disk that can be used to boot your computer in the event of hard disk failure. The

Rescue disk contains important information about the data on your hard drive, as well as utilities to help make repairs, including Norton Disk Doctor, UnErase, and UnFormat.

Configuring Desktop is nearly as easy as installing it. The program automatically translates Program Manager groups, placing open groups on the new desktop and gathering all unopened groups into a single Quick Access group.

Virtually every aspect of the Desktop itself and each of the included applications is customisable, from screen colours to the sizes and contents of toolbars. Desktop 3.0 makes the process of customising extremely easy with its new Control Centre, a utility that provides all-in-one access to configuration options.

Keep those files under control

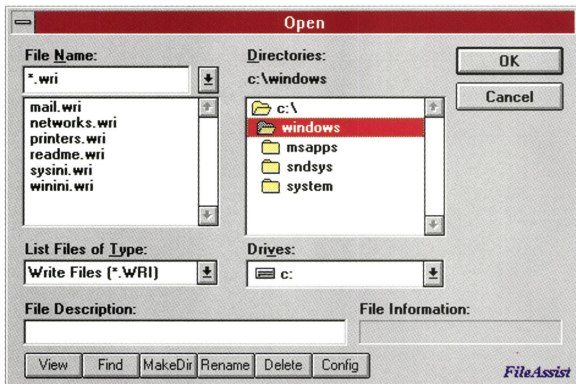
Desktop's file manager, accessed through drive icons located directly on the desktop, loads quickly — more than twice as fast as the file managers provided by Windows or PC Tools for Windows.

One reason for this alacrity is that, by default, version 3.0 does not

read the directories when you call up a drive window but instead reads its own data files from the last opening, which can lead to errors: changes made by other programs will not show up until you hit the Refresh button on the toolbar. If you select Use Collapsible Tree from the Tree menu, however, Desktop will refresh its list of the drive contents every time you call up the drive window. This results in slower response times, but Desktop's drive windows are still faster than those of the competition.

Desktop's file management tools are very convenient; Desktop has caught up with PC Tools and offers similar flexible methods of handling files. You can pop open single or multiple drive windows and scan directories visually, moving through the directory tree on the left panel and viewing the names of files within directories in the file panel to the right.

Desktop lets you sort files by name, date, size, or type, in either ascending or descending order. You can view all files on an entire drive that match your criteria, but you cannot display files across drives.



This is the File Assist window as it appears when opening a file from an application (Windows Write in this case). The arrow next to the file name opens a window showing the last few files opened (configurable) for quick return to previous work. The buttons at the bottom let you manage as well as open files, which can be convenient

NORTON DESKTOP FOR WINDOWS

Norton's SuperFind utility does work across drives. It allows you to enter all file specifications for searching and, in addition, lets you specify more than one drive to search. Like PC Tools, it lets you search for files that contain a specified character string.

Desktop performed all our file operation tasks with aplomb, from tagging and copying groups of files across directories and drives to changing the file attributes of masses of tagged files simultaneously. Just like PC Tools, Desktop can handle copy operations — even copying entire branches of directories across drives — with simple drag-and-drop methods.

However, that is not Desktop's native mode; unlike PC Tools, the Desktop file manager equivalent doesn't automatically tile additional windows but instead overlaps them, requiring cumbersome manual adjustments before you can see to drag-and-drop. Also, drag-and-drop is copy only. Desktop feels much easier and more natural when you select an item and then click on the copy or move button; this pops open a browse window for the destination, which disappears when the operation is finished.

Undeleting files is also simple to do using Desktop's SmartErase utility, similar to PC Tools' SafeDelete. SmartErase will automatically track up to 10 of your most recently deleted files for quick recovery. If the file was deleted during a previous session, you can search for the deleted file and then recover it by providing the first character of the file name, just as long as you have not written over the disk space that was occupied by the deleted file. In his typical purist (read nitpicker) fashion, Jan questions this feature: it duplicates part of what Windows already does under DOS 6.

Version 3.0 of Desktop has caught up to PC Tools with two very handy file management tools. First, it has provided a directory comparison feature that makes updating multiple systems a snap. Second, Desktop now matches PC Tools' file compression.

Zip archives can be made to appear as directories in the file window and you can treat files in them as with real directories, using drag-and-drop methods to add, move, delete and view files. The only snag is that if you drag and drop files to an existing password-protected Zip archive, the new additions are not password protected and there is apparently no way

to add that protection. Desktop has gone PC Tools one better on file compression: PC Tools merely supports PKZip 1.0; Desktop can handle PKZip 2.0 files as well. What's more, in addition to password-protecting Zip files, Desktop also allows you to encrypt them.

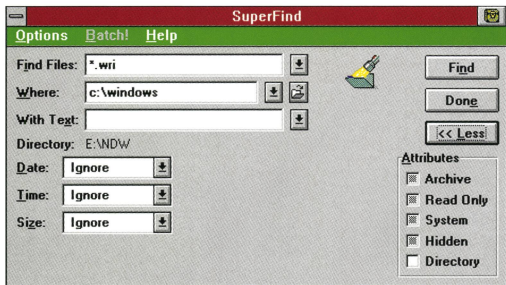
Take a peek

Desktop's improved Norton Viewer now supports more than 100 file formats (as against the 60-odd of PC Tools), including all the major database, spreadsheet, and word processor formats (with the exception of the new Word for Windows 6.0, which Symantec says should be added in the first quarter of this year). Like PC Tools, Desktop can now display those files with all their character and paragraph formatting.

Desktop's support for graphics files is a bit spotty. Like PC Tools, Desktop lacks viewers for JPEG files. Desktop also lacks viewers for encapsulated PostScript format (EPS) and 24-bit .PCX files, which PC Tools has. We were also unable to get several of our 24-bit Tagged Image File Format (TIFF) files to display, despite the fact that Desktop claims TIFF support.

Another enhancement in Desktop's Viewer with this version (which PC Tools lacks) is Clipboard support. When you are viewing a file, you can copy data to the Windows Clipboard for insertion in another application. The stand-alone Viewer application offers a toolbar button for copying highlighted data to the Clipboard.

You can perform the same chore from a view pane by using the Windows keyboard command — Ctrl-Insert — or by selecting Copy from the menu that pops up when you right-click on the view pane. Copying from the view pane is not accurately documented, though.



Superfind is not a newcomer to Norton Desktop, but has been improved by the ability to search across several drives (activated by the 'open directory' button to the right of the file name)



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Run, program, run

Desktop's menuing and application-launching capabilities are a great improvement over Windows and are, with one significant exception, comparable to those of PC Tools.

In addition to creating hierarchical groups of applications — you can use simple drag-and-drop techniques to drag executables from the drive window to a group window — Desktop also lets you create Smart Groups. Smart Groups are similar to program groups except that they track data files in DOS directories. For example, you can create a Document group that will include all files with a .DOC extension. Control over group appearance is very strong and follows the PC Tools arrangement. That is, you can specify the vertical and horizontal spacing of icons within the group and set individual groups to display either the traditional icons with titles, a list view of icons along with their titles and descriptive text, or a space-saving toolbox view that shows only the icons. Desktop allows you to password-protect entire groups, as well

as individual items in a group. Desktop does not match the PC Tools desktop manager in another respect. PC Tools lets you save multiple configurations of groups and applications for later retrieval with a single click of the mouse. This feature can also be used by a network administrator to limit access by network users to applications.

The Norton Desktop does not allow users or network administrators to configure multiple desktops and relies on the Network Menuing Administration Pack, an extra-cost add-on, to control user access to network directories and applications. You can launch applications in a variety of ways, including the standard Windows ones. Desktop also allows you to place and customise toolbars on the main desktop, in individual group windows, and in drive windows.

Each toolbar can display a different set of Desktop applications and file commands, as well as the Run command prompt. You can also access applications quickly on the fly by right-clicking on the main desk-

top to pull up the Quick Access menu. While groups and subgroups can't be set to close automatically when you launch a program, you can get the same effect by double-clicking the program or group icon with the right button, which is an interesting approach and calls for a little practice, since the middle and ring fingers lack the dexterity of the index finger.

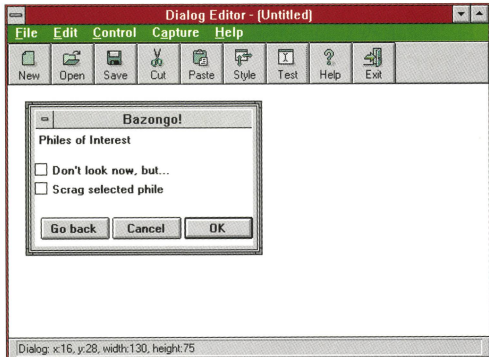
You can create scripts, by recording or by programming, to launch applications and perform predetermined operations. Desktop's new ScriptMaker, unlike its Batch Runner predecessor, is Visual Basic compatible and in fact has many of the powers of that programming language, including the ability to create full-featured dialogue boxes. ScriptMaker also contains a significantly wider variety of commands. Once a script has been compiled, you launch it just as you would any other application by clicking on the script's icon. This is one area where Desktop has it all over PC Tools.

If you want to fully automate application launching, Desktop has a Scheduler that lets you set regularly recurring dates and times to launch any program or script you specify. Typically, these would be virus scans or specified backup chores.

But there's more!

Like PC Tools, Desktop has always provided an impressive array of extra utilities and applications, from data backup and anti-virus programs to an icon editor and screen saver. version 3.0 of the program is even more generous. For starters, important utilities that were not fully functional under Windows in version 2.0 — most notably Speed Disk and Disk Doctor — now are.

Not only can the new Speed Disk optimise drives under Windows, it is faster than any optimiser we have seen and, unlike the PC Tools optimiser, can handle drives



This is the dialogue box editor that goes with the full programming language masquerading as a macro utility. We found it the proverbial snap to use

that have been compressed with DoubleSpace, Stackler, and SuperStor.

Disk Doctor can repair drives with Windows running and, even better, it can now handle compressed drives.

Like PC Tools, Desktop offers a world-class data backup program and one of the strongest anti-virus programs in the business. In addition, Desktop 3.0 offers a set of new applications that PC Tools lacks.

At the top of the list is FileAssist. This utility works with any application that employs the standard Windows File Open and Save dialogue boxes, extending the dialogue boxes in several important ways. The traditional field for file name now has a scroll arrow. If you press it, you will see a list of the 10 files most recently opened in that application (you can raise the number to 25). At the bottom of the modified File Open and Save dialogue boxes is a field where you can enter a 128-character description of the file. To the right you will find file size and date information. And

along the bottom of the new dialogue box is a toolbar with a set of handy commands: View, Find, Make Directory, Rename, Delete, and Configure.

Sadly, a number of applications supply their own dialogue boxes, which not only is a waste of disk space but also prevents FileAssist from working.

The list includes Lotus Ami Pro, WordPerfect for Windows and all the Windows applications from Borland and Micrografix.

Another notable addition is Desktop's new Day Planner. It can't compete with Commence or Pack-Rat, but it does provide solid tools for tracking appointments and to-dos, plus a phone book for keeping information on contacts.

Finally, like PC Tools, Desktop is now electronic mail enabled. If you have a Mail API (MAPI)- or Vendor Independent Messaging (VIM)-compatible e-mail program installed, you can send files to others by simply dragging them from a drive window to the e-mail icon. Unlike PC Tools,

many of Desktop's utilities will let you send reports directly via e-mail.

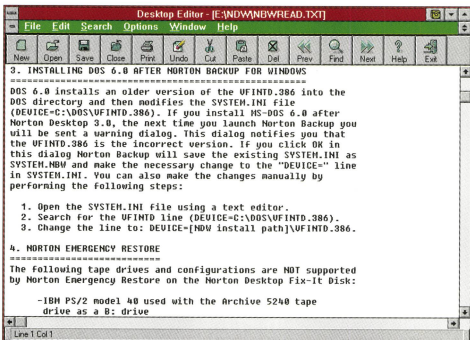
The only problem we noticed with any of these utilities and applications was that three of them — Speed Disk, UnErase, and Norton Disk Doctor — will not work with the protected-mode file system of Windows 3.11. Symantec acknowledges the problem and says the next version of Windows (currently code-named Chicago) should resolve the difficulty.

Would you read about it?

Desktop for Windows is accompanied by a surprisingly slender users' manual. Though well written and liberally indexed, the manual does not sufficiently cover certain topics. We were unable, for example, to find a complete explanation of the file manager's filtering and sorting tools. Also, we were disappointed to find the viewer's capability to cut and paste text from the view pane to Windows' Clipboard to be undocumented. Fortunately, Desktop's

printed manual is supplemented by one of the best designed on-line help facilities we have ever seen. Hyperlinked and searchable, the help facility makes it easy to find topics. You can also move to the explanation you want by expanding and collapsing the help facility's table of contents. Unfortunately, like the hard-copy manual, the on-line help fails to explain some topics adequately. For example, the explanation of how to use the Clipboard to copy text from the viewer referred to menu options and buttons that appear only in the stand-alone Viewer and not in drive window view panes, a situation that could seriously confuse users.

On the plus side, Desktop's QuickHelp front end to the help files provides a task-oriented method of accessing help, and clicking on little treasure chest icons that appear in the title bars of applications and dialogue boxes brings up helpful tips. ■



The Norton Desktop editor has no equivalent in PC Tools. It can replace the standard Windows Notepad and has a couple of notable advantages, apart from the obvious configurable button bar: you have a (limited) choice of fonts and can load several files simultaneously. Note the little treasure chest icon in the top bar; it opens a scrollable list of helpful tips

Keeping track with Windows databases

Databases currently available for Windows vary in complexity and design. From a simple 'card file' index to complex relational databases, there's a range of products to suite most users' needs

By Neale Morison



Ceres Shannon

Whether you want to keep track of your CD collection, or create a system that links the business details of thousands of customers and contacts, orders, invoices, payments, products and prices, you can create a PC database system to do it. There's a database system of the appropriate complexity for whatever job you want to do.

Unstructured data

Databases are structured repositories of information. The alternative to a structured repository is something like a text retrieval system, where information is stored as text, scattered about in word processor files and spreadsheets. A text retrieval

system indexes the text, and can show you the file contents when you search for a particular word or group of words. Unstructured data is great when you're going to apply human intelligence to the results of a search. If you search for all files containing "Paradox" and "PC", you can browse the results to locate articles relating to the Paradox database for PCs. However, you may also pick up files that have nothing to do with databases or personal computers. Unstructured data is too disordered for a reliable automatic system. A well designed structured database, combined with programs that manipulate the data to implement your business logic, can automate all

your routine business and free your human intelligence for real work.

Databases and the programs that process data comprise the world's largest computer installations, and lie at the heart of today's businesses. For the largest systems, databases reside on huge disk farms managed by mainframes. For the smallest the database resides in a file on a PC disk. There are many levels of complexity between those extremes. Beyond a certain level, creating a database requires technical knowledge of database design and programming skills.

The database applications available for the PC can be grouped according to complexity. We'll start

from the simplest and move up, discussing a few representative databases as we go.

Keeping track with CardFile

One of the simplest Windows databases is Microsoft's CardFile, suitable for keeping track of exactly the same sort of information that is kept in a paper card index. CardFile offers some special Windows features as well. It has the advantage that it comes with Windows, so it doesn't cost you anything. Its features are very limited, and it's accordingly very simple to use. Each card has an index line and an information area. Cards are ordered alphabetically using the index line, so there's only one way to retrieve information — through the index. The same limitation applies to paper card files which can only be stored in one order.

However there's also a general Search that looks for specific text within the body of cards, and a Goto feature that finds information anywhere in card index lines. If your database is small, it's a quick way to retrieve anything you can store. In a single card you can store 440 characters of text, or a small amount of text with an object inserted from whatever OLE (Object Linking and Embedding) servers are available. This can include a spreadsheet block, a bitmap file, a sound clip or a video clip. The Windows CardFile also has an autodial facility that takes the first number it finds in the current card, and uses your modem to dial the number, so card file can work as a simple phone book.

So what can't CardFile do? You can't keep a customer record, with a lot of information for each customer, such as specific details of several addresses, phone numbers, and notes of business dealings. You need more space for the data, and you need to order it within named fields, for specific retrieval — so, for example, you can distinguish the phone number from the fax number. You also need to be able to sort by more than one field, so that, for example, you can find a customer by contact name, or by company name, or perhaps by a code indicating the type of business

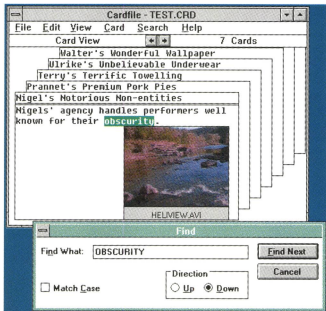
the customer represents. More sophisticated databases create indexes based on fields, so that you can sort data in more complex ways.

Flat file, relational and SQL databases

One of the most successful of the

for Windows market leader. See the "XBase for Windows" panel for details.

dBase provides a flat file database — the structure of the database itself contains no information linking records in one database file to records in another file. If you want to



Microsoft's CardFile is about the simplest Windows database system there is, but it provides a means of performing many common data management tasks

early PC databases to provide fields and indexing was dBase. Created by Ashton-Tate, it has gone through various DOS incarnations, all the way through to version IV, and picked up a huge following along the way. Ashton-Tate was acquired by Borland, who have gone on to further develop the language for DOS and for Windows.

The dBase file format has become a de facto standard, and the dBase programming language is familiar to so many power users and programmers that there is an ongoing market for dBase compatible systems, called XBase systems.

These include FoxPro, since acquired by Microsoft, and the Clipper compiler created by Nantucket Corporation, since acquired by Computer Associates.

The large software vendors who want a stake in the database market have clearly decided they can't do without an XBase product, and they're all competing to be the XBase

logically link databases you do so explicitly, using the dBase programming language. Logically linking databases is vital to storing complex information. In one database you might store customer records, and in another customer orders.

Each order belongs to a customer, but a customer may have many orders — a one-to-many relationship. You may also wish to create one-to-one and many-to-many relationships. To deal with this common design requirement, relational databases were invented, in which the relational links between databases are built into the database structure. Borland's Paradox and Microsoft's Access are examples of relational databases for PCs.

By far the majority of databases used for complex applications in business are relational databases. These databases usually run on Unix workstations, minicomputers and mainframes, and include Oracle, Sybase, Informix, Ingres and IBM's >

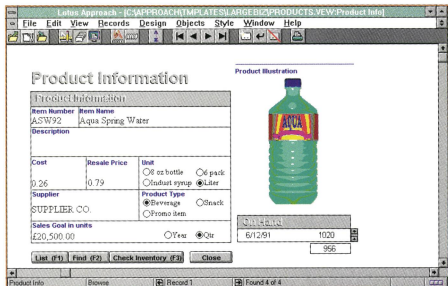
DB2. They fall into the general category of SQL databases: databases with a relational structure, which support the Structured Query Language developed by IBM (often pronounced SeQuEL). They're important to a discussion of PC databases because of the rising popularity of client/server computing. In client/server computing a client application communicates through a network with a server application. The client can be a PC database system, and typically communicates via SQL with an SQL server database engine running on a powerful, communal server machine.

The more powerful PC databases are falling over themselves to provide client/server capabilities in their products.

Lotus Approach

Lotus Approach is a relatively simple PC database, but many times more complex than CardFile. Approach is well suited to creating a customer database and using the data to generate form letters and labels. There are functions for designing form letters and labels built in, and templates that provide ready-made customer databases.

You can open existing databases.



Lotus Approach provides a very easy to use database system that offers relational features, attractive design and enough power for quite complex data entry and retrieval tasks

Approach can provide access to data stored in other formats, including dBase III+, dBase IV, Paradox 3.5, FoxPro 2.1, and it offers read/write access for SQL tables and IBM DB2. It also supports the Open DataBase Connectivity (ODBC) standard, so that if you have the appropriate drivers you can manipulate data in

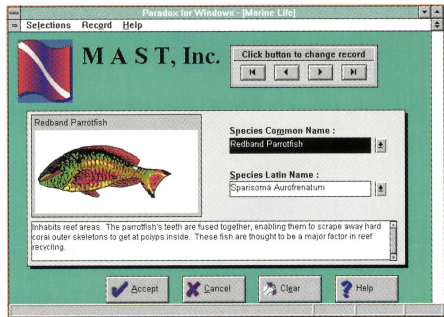
databases supporting ODBC. This standard includes many of the SQL databases.

Approach is relational in the sense that you can join databases, even databases in different formats. You read and edit databases in a View, which provides an interface that conceals the details of database format.

You can design the view in any way you like without modifying the structure of the underlying databases. You can create new databases very easily, put them into production and refine the interface later.

There's a macro system that lets you automate most of the functions available in Approach. It's not a full programming language, but it gives you enough to create simple interfaces with buttons that perform special actions. Approach is very easy to learn, because it's limited. You can be creating useful databases in hours.

What can't Approach do? It lacks a real programming language, so you can't use it to create powerful applications that can form the basis of your company's business. It lacks many of the sophisticated features that preserve the integrity of relational data, and features that ensure performance when databases grow



Paradox offers the tools for designing complete Windows database applications

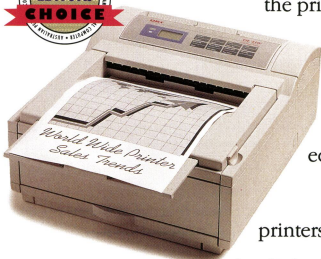
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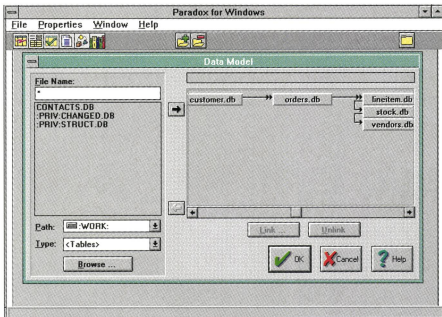
Telephone. Facsimile.

large. If you want to create database applications critical to your business, you should move to a higher level of complexity, with products such as Microsoft's Access and Borland's Paradox for Windows. Both Access and Paradox for Windows are aimed at multiple audiences.

They offer a graphical approach which allows sophisticated users to manipulate data without learning programming skills. For developers, they also provide a complete environment for programming complex database systems, which requires a thorough understanding of database design, the proprietary language associated with the database, and a spot of SQL knowledge doesn't hurt.

Neither is very suitable for the absolute novice. However, while they can't be learned as quickly as something like Approach, users can be productive in creating and entering data in a reasonably short time. The argument on which is better centres on how well each product covers this wide range of suitability from non-programmers to real programmers. For example, Access stores its data-entry forms, database structure, data and other information in a single file. Looked at one way, it's an advantage, because it's easy to copy the file. Looked at another way, it's better to have many separate files, because damage to one file doesn't affect the whole.

Paradox is a resource-hungry system, and when used for novices on machines lacking power it may be unsuitable, since much of its vast functionality remains unused. Access is probably more appropriate for the novice user than as a full-scale development system. However, the Access JET database engine is now shared by Visual Basic Professional edition,



The Data Model dialogue in Paradox lets you specify the relationships between databases with a single mouse stroke

so developers who like Basic can design in Access and program in Visual Basic.

User input

In these more sophisticated databases, there are several entities that a user must design: database structures and relationships, forms for entering and viewing data, queries which group data according to search criteria, and reports, which may be viewed on screen but traditionally comprise the printed output from the database.

For all of these there are graphical design systems, which make extensive use of Windows point and click, drag and drop features. For example, in Paradox you can design

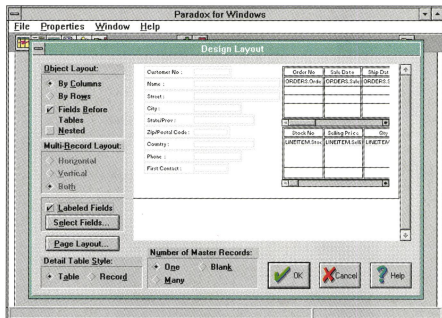
a form which includes several linked databases by first defining the data model.

You select the required databases from a list and define relationships by dragging a connecting line between database symbols. Paradox then resolves the links and aligns the model automatically. In the next dialogue box, you're presented with options for the rough layout of the form, with a reduced preview that alters to reflect the options you've chosen. In the next step you're in design mode, allowing you to drag and drop objects on the form until you have the precise design you want.

In Access you can drag and drop one form onto another to create multiple database forms. Both systems provide thoughtful and, for the most part, friendly interfaces for creating and manipulating the components of a database system, and there's enough similarity for a crude standard in graphical database design to emerge.

What can't Access and Paradox do? They can't act as powerful database server systems for enter-

In Access you can drag and drop one form onto another to create multiple database forms



Forms design is automated so that you need only select a few options to create a complex, multidatabase form

prise databases used by huge numbers of users simultaneously. They're not designed for that. That's what SQL servers are for. Access and Paradox are designed to form the basis for client applications in a client/server system.

Borland has gone so far as to package a client/server system, which includes Paradox Development Edition and Interbase, Borland's highly sophisticated database server, for a SCO Unix/Intel platform. Borland expects to have a Windows NT port of Interbase available soon. Microsoft is also in the database server market, having licensed the Sybase SQL Server and added features to create the Microsoft SQL Server.

If you're prepared to consider a Windows NT server as a personal computer, then both these database server systems rank as another, higher level of PC database system.

With the rising generation of scalable operating systems, we can expect to see these database servers and their clients take over ever greater chunks of the corporate computing world.

Other solutions

Other database development systems available for Windows include SuperBase, from Software Publishing Corporation, and Omnis. These have their own established supporters. Both products have been available for many years through several versions, and have matured considerably.

No vendor has found the one single answer, the all-purpose PC database. Because databases model some aspect of the real world, they become complex quickly, and addressing that complexity requires learning one or more programming languages. While the spreadsheet paradigm is becoming more and more standardised and widely understood, sophisticated database systems still show considerable variety. dBase, combined with a standardised graphical approach to designing relational databases and interfaces in Windows, may provide that common ground, or the answer may include some dialect of Basic or SQL. For now, you're well advised to pick one database system and stick with it. ■

XBase for Windows

When Borland acquired Ashton-Tate — and with it the dBase language — it shouldered the task of bringing that language to Windows. It hasn't proven easy, but previews of Borland's dBase for Windows indicate good choices in interface design and concept. Borland is expecting to have dBase for Windows ready this year, but not before competing products have arrived. Computer Associates has already released its dbFast product, which provides a dialect of the dBase language and a Windows environment for creating database applications compatible with the dBase file format. It has screen painting facilities for interface building, and dBase programmers can use dbFast to employ their dBase coding skills in Windows. The product includes a compiler, linker and debugger and a royalty-free runtime licence.

Meanwhile Computer Associates is in the process of completing the Clipper for Windows project, now called Visual Objects. Previews of Visual Objects indicate a very powerful development environment, rivaling and possibly overshooting the capabilities of the latest PC C/C++ development environments. We may hope for Visual Objects to appear around the middle of 1994.

Microsoft's FoxPro for Windows is now out in version 2.5. It provides a dBase compatible language with extensions, including an additional 200 commands. It also makes use of the Windows OLE (Object Linking and Embedding) and DDE (Dynamic Data Exchange) facilities to allow you to store objects in databases. FoxPro runs on several platforms — MS-DOS, Windows, Macintosh, and Unix, and the data is stored in the same format, so it's a great product for heterogeneous environments.

Shedding light on the enigma of Notes

We've been told what Lotus Notes can do, but what actually is this new software?

By David Hague

Date	Topic
01/14/92	Dragging multiple icons (Ellen Byron, 1 response)
01/16/92	No problem with a mouse... (Jim Menlo)
05/18/92	Intel MDM drivers (DAVID JONES, 1 response)
05/20/92	Intel 14.4 MDM file (Peter Mansfield)
05/21/92	Where to get Notes (Carl Family)
08/01/92	Spelling checking (Frank Bobson, 2 responses)
08/20/92	Some answers to your questions (Barbara Densly)
08/21/92	Ah ha (Frank Bobson)
08/21/92	Notes Classified Ads (Phillip Melund, 6 responses)
08/24/92	Great Application! (Rob Wallis)
08/24/92	Give us a full path to the file (Jim Menlo)
08/26/92	Request Granted (Phillip Melund)
08/27/92	Answers #1 (Phillip Melund)
09/02/92	You can now edit ads (Phillip Melund)
09/12/92	How about remote? (Lee-Ann Smith)
09/01/92	Indented Categories (Lori Heading, 1 response)
09/11/92	It is supported in Notes (Pete Ziggs)
09/16/92	Can Notes remember ALL of my categories in Mail? (Steve Harper, 4 responses)
10/10/92	I don't think so (Ann Sturdivant, 1 response)
01/04/93	But what about... (Steve Harper)
12/23/92	V3 will do what you want! (Donna Limbel)
01/07/93	YEAH! (Steve Harper)

A Notes View of a Discussion Database. The asterisked items indicate documents you haven't read. Each level of indent shows a level of response

Open any computer publication these days and you will invariably find a reference somewhere to Lotus Notes. Notes has become the darling of the PC industry — with one warning: nobody as yet seems to have described what it is, only what it can do, and even these descriptions are vague at best.

About Notes a huge mystique has evolved, bordering on the paranoid and reminiscent of the men in white coats in glass rooms of the mid-sixties computing ethos. In IT circles, Notes is spoken about in hushed and reverent tones and treated almost as the god of software. Lesser PC mortals with a desktop and spreadsheet at their disposal tend to dismiss it as too hard or too expensive.

Truth be known, Lotus Notes is not such a difficult program to understand once you've seen it. The problem, of course, is that very few

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of us *have* actually seen it. This is a pity because many people who should take a look would find a plethora of uses for its power once they understand the basics of how it works and the kind of methodologies it uses.

There have been a number of attempts to try and describe Notes, ranging from the unkind "fancy bulletin board" to a slightly more apt "CompuServe-like forum".

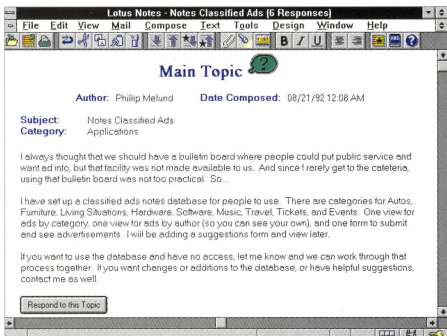
The official Lotus view of Notes as being a "group information manager letting users collect, organise and share information over networks and dial-up lines" is ostensibly correct but still a bit imprecise. In reality, Notes is all of these things, and then some.

In Notes, applications are built using at least one database. In this context, a database is a collection of documents stored in a single file, with each document analogous to a record in the more conventional Paradox/dBase/Access kind of system. The power of Notes lies in just what sorts of objects can comprise a document and the flexibility and options users have in creating, modifying, viewing, commenting on, and generally accessing this document.

To illustrate the basics of a Notes application, we'll use the example of a group collaborating on a single publication, say a magazine like this. Within such a workgroup each person is responsible for his or her own section of the magazine; everyone also shares ideas and thoughts about each other's sections: so there needs to be a system for making contributions to each other's work in an organised way.

To start with, the person who designs the magazine's basic format creates a database document; for example, a PageMaker file which

*In this context,
a database is a
collection of
documents stored
in a single file*



A typical Topic form inviting responses. The button at bottom left contains a macro to launch a response form rather than the user having to do it manually through the menus

contains the bare layout without text, pictures, adverts and so on. You use a Topic Form for this — it has fields for author, subject, date and so on, and the PageMaker file is embedded as an attachment. If another member of the workgroup wants to make some comment about the layout, he or she fills in a secondary form, which Notes calls a Response Form. All such Response Forms are organised in the database's "index" — which Notes calls a View — as documents subordinate to the original Topic Form layout document. It is also possible to have Response to Response Forms.

The standard View just gives the document's subject, creation date, author, and the number of responses to it. But you can request as many different Views as you need, and the author of the database can allow more detail to be shown if desired. For example, another View may show the documents in the database sorted by Author or Date rather than by Subject.

Forms in Notes are similar to forms in any other database package:

they consist of fields which are to be filled in by the user and which can also contain graphics images, textual descriptions and so on. The difference is that a Notes database does not have a data dictionary of fields that is applicable to the database as a whole. Instead, each form contains its own unique fields (although fields can be shared across forms), and a database can have any number of forms, which gives the net effect of a database inside a database.

Field types are also inherently different to a standard database package, being restricted to Text, Number, Time/Date, Keyword and Rich Text in addition to Author, Reader, Names and Section fields. Each of these can have separate attributes, such as Computed, Editable, Non Editable and Computed When Composed. (Computed fields contain string and numeric formulas and functions; over 100 of these are supplied with Notes.)

In our example of the publication workgroup, the main Subject Topic form would consist of the PageMaker layout in a Rich Text field

as either a graphic, file attachment or embedded OLE object; the rest of the form would contain Author and Date fields and a Text field for the Subject.

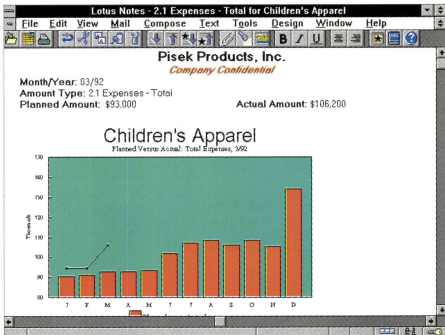
Rich Text fields can also contain spreadsheets, graphs, entire documents from word processors, sound clips, Video for Windows movies — in fact any valid Windows "object". It is also possible to enter text directly into a Rich Text field with similar controls and attributes as those in your average word processing package.

In our magazine publication, with this initial form as a starting point, other forms with their own subject matter and contents, together with any appropriate responses, would be created as the project evolves. This means you have a complete track of all information and conversations from the start of the project through to its completion. Forms could contain information as diverse as lists of names, addresses and phone numbers of advertisers, submitted editorial content, proposed graphic images of ideas for the front cover, costings, and so on.

All of this information is available to any member of the team for perusal and comment via response forms, unless the author of a document (or the system administrator) sees fit to apply restrictions. For example, the ACL (Access Control List) could be modified so that journalists have no access to advertising information about revenue.

Conversely, editorial pages could be made available to the sub-editor as documents that can be edited but to the graphic artists as read-only.

Let's now expand our workgroup further and say that although the editorial head office is in Sydney, various journalists, artists and other members of staff reside in far-flung places. Notes makes it comparatively easy to administer this situation: each member of the team can dial in to the Notes server to send, view or comment on information. Alternatively, each could maintain his or her own Notes server, linked back to the main one with a copy of the database and all its information. Using a system Lotus calls "replica-



Notes' databases help you disseminate all kinds of information — this OLE embedded graph, for example — through the workplace

tion", Notes' servers routinely send updated information around the Notes network ensuring that all connected servers contain a current version of the database.

To illustrate this system in action we'll use the example of a finance and share brokerage with worldwide offices. Each office has a Notes server with its own users, and any one person on this global network can place a request for information for, say, a particular type of client with money to invest in a certain project. Notes routinely disseminates this request to all servers and users with the appropriate access so that anyone with authorisation can comment upon or answer the request. Consequently, a simple request made in Melbourne can be answered overnight by someone in Reykjavik, Iceland! (Remember, however, that you need a 9,600bit/sec modem or better to cope with the potentially vast amounts of information that can be sent from a single server.)

As well as collating and dispersing information in an orderly and elegant way, Notes has a built-in

electronic mail messaging system. As with any other Notes application, all mail is kept in a database which is created when Notes is installed. E-mail messages can hold attachments, embedded objects, and virtually anything else a standard Notes form can contain. ■

Lotus Notes was glanced at in PC World's First Looks, April 1993 and was featured in the "LANs and workgroups" article in our February 1994 issue.

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Multimedia and drawing tools for Charisma

Added features bring presentation package up to date but bog down its performance

By Alan Fridlund

It's been almost two-and-a-half years — an age in today's software business — since Micrografx last upgraded Charisma. Although that program drew a coterie of fanatics (some of us here count ourselves among them), its speed and superb drawing tools were hamstrung by a lack of tools for constructing entire presentations, unlike SPC Harvard Graphics or Lotus Freelance Graphics. This new release of Charisma has all the requisite presentation bells and whistles and then some, but all of these capabilities don't make for an absolute triumph, because the quickness of the original Charisma has been lost in feature bloat. Nevertheless, it's a sophisticated package with features that you can both start with and grow with.

Focused templates

Micrografx intends Charisma 4.0 to be the leader in a new generation of desktop presentation packages, one that incorporates high-end graphics capabilities in a presentation framework.

Unlike the previous Charisma, which was really more a chart-by-chart graphing and drawing package, Charisma 4.0 has a true presentation focus. You select a master background for your entire presentation and then import or type the text for all your slides into Charisma's master outliner. *Voila!* — the text is automatically formatted and placed on your charts according to the conventions of the templates you've selected. If all you need are text charts, you just go from chart to chart and tweak the appearance of each, adding clip art or custom drawing effects to one or more. You create any numeric charts using the spreadsheet-like internal editor and a visual gallery of chart types.

You then cue an on-screen slide sorter to view your whole presentation at once and, if need be, drag specific charts around to just the right order. After you're done with all your charts, you can build a screen show in which you can shuttle from one chart to another, interposing special effects with each transition and

adding multimedia elements, such as sounds and video clips, to particular slides. To help you give your talk, you can ask Charisma to create speaker's notes with thumbnail depictions of your charts. For your audience, Charisma can make handouts with the same kinds of depictions. If your goal is a printed report, you can batch-print all your charts and notes.

Fully imported

When we opened Charisma, we chose to create a presentation formatted for a screen show (the other choices were for 35mm slides or a printed report). When we tried to import an outline in Microsoft's Rich Text Format (.RTF) and ASCII, Charisma imported only the first half of our outline text. After we'd replaced the truncated text, making each chunk of the outline into a slide required only minor reformatting.

We were disappointed in the outliner's lack of flexibility. The outliner works only on a line-by-line basis, and we couldn't select blocks of text and cut and paste them to new slides. We were able to reorder our slides by dragging the slide icons around within the outliner. Clicking the correct icons on the outliner's icon ribbon saved us using the keyboard to set our text levels within a slide.

Although Microsoft PowerPoint, for example, mirrors your chart text styles in the outliner, Charisma uses a uniform typeface in the outliner. We still think it's valuable to display type styles in the outliner.

We then tried to place the PC World logo on each slide in our presentation. After making a .PCX bitmap image of the logo, we suc-



The opening screen makes it easy to select the eventual output medium

cessfully imported and resized it and placed it on our first slide. Then we had to ask Charisma to make a new background from our first slide, whereupon it took the background with the logo and applied it to all the slides in our presentation. This was easy enough, but having a separate editable "master page", as do Freelance, Harvard and PowerPoint, for example, would have eliminated the second step.

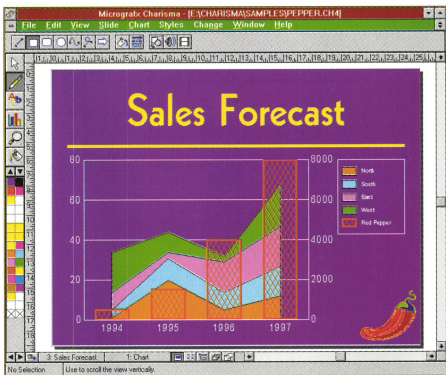
Charting the numbers

Making our first numeric chart was easy once we got our data in. After setting up the templates and choosing the type of chart we wanted, we attempted to import two non-adjacent columns (labels and the corresponding data) from an Excel spreadsheet, but we saw no easy way to do this. Instead, we had to drag the mouse over the entire data area, close the import worksheet and paste in the entire dragged area. We then deleted the unwanted columns. Alternatively, we could have selected the two columns and pasted each in two separate operations, but it would have been nice to be able to import just what we wanted in a single pass.

About 5 minutes of cutting and pasting made our numbers suitable for the chart, and, when we closed our data sheet, up popped the chart we'd selected in roughly the form we wanted. A few moments of tweaking made the chart look exactly as we liked it.

We made our numeric charts directly from raw data, although we might have used Charisma for manipulating our data. The data sheet can transpose rows and columns and do simple calculations on selected cell ranges. Given the right kind of data, Charisma can calculate linear, logarithmic and exponential regressions.

We then built a title slide and chose to embellish it with a suitable clip-art symbol — in this case, a camera — selected from the supplied CD-ROM. (A small subset of the art is also supplied on the program disks.) We used Charisma's sophisticated new Media Manager to search the 7,000-item clip-art catalogue on



Clear and informative graphs are easy to add

the CD-ROM. Within about 30 seconds, the Media Manager had scanned the catalogue and presented us with several suitable pieces. We double-clicked on the best symbol, which placed it on our new slide, then resized the symbol and dragged it into place.

The outliner's inflexibility and problems with importing our outline file, the awkward method of importing numerical chart data and the extra steps involved in making a master background are drawbacks that are hard to ignore. However, these are offset by the terrific Media Manager and visual chart gallery.

Sliding easily

We were able to insert new slides into our presentation in several ways. In the outliner, adding a slide was just a matter of typing a few carriage returns before or after an existing slide; this established a new slide icon, alongside which we could simply type the new slide title. In the main slide editing screen we could just click on the Add Slide menu command, or, easier still, on the Add Slide

icon at the bottom of the screen. To determine where the new slide goes, simply select an existing one; the new one will be inserted after it. Adding a slide produces a dialogue box that asks you to choose a template style. You can preview all templates on-screen to find one that matches the theme of your presentation.

When we double-clicked on the chart place holder, up popped a visual gallery of selections for column charts, which happened to include the kind we wanted. We might have selected another kind of chart from the adjacent scroll box: Charisma comes with 11 major types, including pie, line, area, scatterplot, Gantt (time line), bar, spider chart, column and data table. Most chart types are available with three-dimensional effects.

We found no way to transform one of our bullet charts directly into an organisation chart. In fact, we found no mention of any organisation chart capability in the manual or the on-screen help. (Micrografx offers Windows OrgChart and has just introduced a Visio-like product, ►

SnapGraf, which does organisation charts.) We were forced to construct our organisation chart step by step. The process was cumbersome, to say the least.

Text twiddling

Once we had created a bit of text, we wanted to test how easily we could change its attributes. We only had to select the text and click on the text toolbox icon. A text-dedicated icon ribbon appeared across the screen and we just clicked on the appropriate icon to change the style of the text or to promote or demote it within a bullet chart. Working the ribbon's built-in scroll boxes for typeface and size was only slightly more involved. Centring slide titles, on the other hand, was a more complicated procedure. Instead of being able to use icons, we had to navigate a slew of menus.

We also experimented with several of the text formatting options. There is a ribbon icon for changing a line of text to large and small caps, and we liked the direct way we could

make a block of text into superscript or subscript with one click.

We also used one of the text format dialogue boxes to change the bullets on one of our text charts. We were able to pick any character from any typeface, select a bullet from Charisma's clip art using its Media Manager, or copy any symbol from the Windows clipboard. One encumbrance here is that we had to go to another menu entirely, via the Colour Scheme Styles menu option, to change the colour of our bullets.

We found it easy to resize text. If the text was in a place holder controlled by one of the chart templates, trying to resize the place holder had no effect on the text size. But when we added text using the text tool, we could use drag handles to stretch the text to any dimensions — and the point size displayed on the ribbon bar tracked our changes. We also played with the numerous tricks Charisma allows with text, including warping or extruding it, wrapping it around objects, having it follow a

path and filling it with patterns or symbols.

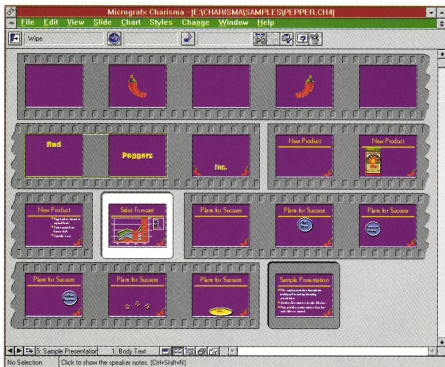
Charisma's spelling checker operates quickly and checks an entire presentation or just a portion. You can spell-check only the outline and slides or include the speaker's notes and audience handouts. The extra steps involved in text and bullet formatting are a minus, but the general handling of text and spell-checking is strong.

Decorating the slides

We first tried adding a graded blue background to our slides by using the Graded Fill dialogue box. The task shouldn't have been such a head-scratcher, but it took us an hour to discover that Charisma's preferences happened to be set to turn off all gradients. We were confused by the fact that, despite the disabled gradients, the Graded Fill option on the menus was not greyed out. (The default setting is to allow gradients.)

The older Charisma was known for its drawing tools and they are still among version 4.0's great strengths. We already described how we were able to warp and extrude text objects; we could use these tools just as easily on any graphics object. We always knew how the effects would look from thumbnail depictions provided on fly-out menus whenever we picked either command. Charisma comes with more common tools, such as lines, arrows, circles, ellipses and Bezier curves. In a feature borrowed from Micrografx's Designer illustration package we could also pop up a 3-D "light" source that rendered 3-D objects (or charts) with realistic highlights and shadows.

Charisma let us play with a bitmap (it handles .PCX, .BMP, .TIF, .TGA, .JPG, and .GIF files, among others) before importing it. We couldn't do point-by-point editing as in the Paintbrush-style program contained within WordPerfect's Presentations 2.0 for Windows. We could, however, crop the bitmap, change its brightness and contrast, sharpen or blur it and apply special effects through filters such as charcoal, watercolour and oil paint. This is more bitmap-handling capability than is afforded by most desktop pre- ➤



The slide viewer table makes it easy to juggle the slides. Cleverly, slides that are linked by some action are shown as film strips. Note the row of icon buttons below and above, used for adding/removing slides and hyperlinks, inserting animations, changing the view and so on

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sensation programs. Charisma let us undo — and then redo — up to 100 actions, which we preset with the program's Preferences command. (We don't encourage setting the number too high, because Charisma needs all the free memory it can get.)

The Undo facility is limited to the current view. For example, if you remove a slide while in the slide-sorter view, you can restore it only as long as you remain in the slide sorter.

Although we did not experiment with all variations of these functions,

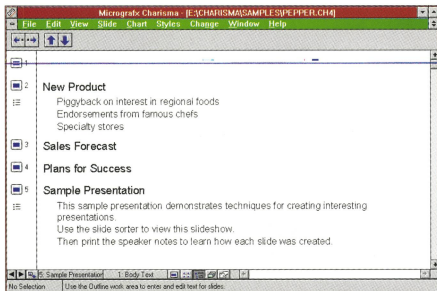
we noted Charisma's capability to use Windows OLE to embed objects from other programs in our presentations and to serve its charts and other elements as OLE objects.

Lining up your ducks

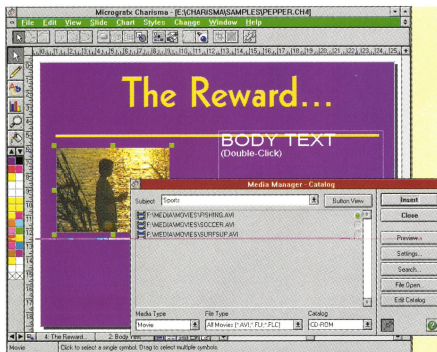
Charisma provides 75 sets of presentation templates, which are as well done and colourful as we've seen. We picked our set of templates from a scroll box and preview screen and this set dictated the master style for our presentation. What we had picked with our selection was actually 11 separate prescriptions for different kinds of slides — for title slides, for title text and a chart, for bulleted text, and so forth. Each time we added a slide, Charisma asked us to declare which of the 11 prescriptions applied to the slide, and this in turn determined where the place holders went and what went in what place. The text place holders also dictated the attributes of any title and bulleted text we entered in them.

We found it relatively easy to add new styles to the template set, delete or rename others and save the set as ours. However, to change a template style requires that you first draw a new slide with the desired changes and then make and save the template style from the new slide. Micrografx considers it more likely that a user will first create a new slide and then save it as a template, but we much prefer the simpler alternative, provided by Freelance Graphics for Windows, of being able to see, edit and save the template styles directly.

Charisma's slide sorter worked in standard drag-and-drop fashion with no surprises. Quick-access icons at the bottom of the outline, slide sorter and slide editor views raised scale depictions of the pages that would become audience handouts or speaker's notes. We then had to use a menu command to apply our set of templates to each. The defaults provided by our templates were that speaker's notes contained a half-page depiction of our slide on the top of the page and space for notes at the bottom. For handouts, the defaults were two slide depictions per page.



The outline view has clear and simple icon buttons, like the other views



The library management tool makes it easy to add video clips, animations, sounds and clip art from the CD-ROM and other sources

We found these formats acceptable and could anyway readily change the format of either one or add a symbol or background. We had one difficulty when we tried to paste text from the outliner into our speaker's notes: because the outliner let us paste only one line at a time, pasting all the text for one slide became a protracted operation.

Master builder?

We initially went to the slide sorter and clicked on the auto-build icon. This was supposed to separate our slide into the individual layers that would constitute the "build". However, all it showed was two layers: our slide background and the bulleted text presented as a whole. We thought we had done something wrong, so we began tediously pasting differently-highlighted versions of our bullet text to different slide layers. We found out later that all this work was for naught, because in fact Charisma did perform the build on the original version of our slide. But the slide sorter doesn't show the successive levels of a slide build when what is built is bulleted text. On the other hand, if you have explicitly added text or graphics objects to separate layers, these are shown in the slide sorter.

Even when we had explicitly added different objects to different layers, the only place where we could see the results of our work was in the slide sorter, where the layers were displayed separately. In the slide editor, all layers were displayed at once, no matter which drawing layer we'd selected to draw to. The slide editor needs a command to display only the selected layer.

Next, we orchestrated a screen show from the slides we had made. From the slide-sorter screen, we applied transition effects by clicking on the transition icon, which raised a dialogue box to pick the kind of effect we wanted. (Charisma provides 16 major effects, including blends, fades and wipes, with variations on each.) Charisma's templates declare a default transition effect and you can apply a new transition globally. The slider control that let us adjust the speed of transition was a

REPORT CARD

PC WORLD

Windows presentation graphics software

	Micrografix Charisma Version 4.0	Freelance Graphics for Windows Version 2.0
Price (single-user)	\$695	\$735
Performance		
Presentation setup and import	Good	Very Good
Slide creation	Good	Excellent
Text editing	Very Good	Very Good
Slide editing and embellishing	Very Good	Very Good
Presentation organisation	Very Good	Excellent
Slide-show capabilities	Very Good	Very Good
Advanced capabilities	Very Good	Very Good
Output	Excellent	Excellent
Speed	Satisfactory	Satisfactory
Documentation	Very Good	Good
Support		
Support policies	Very Good	Good
Value	Good	Excellent
Final score	7.0	7.9

nice touch. Charisma's screen shows went beyond mere slide-by-slide display. An easy pop-up control panel let us jump around from slide to slide; this was useful when we hadn't thought through the best order for our slides.

The most sophisticated screen show feature was the "hyperlinks" control panel, which took a little more planning. It let us place any graphics object on the screen and, when we clicked on it during a screen show, we could jump to another slide, launch another Windows application or play any multimedia file, depending on what we had set up.

When we ran our screen shows within Charisma, the transitions looked smooth and the hyperlinks worked well. Unfortunately, there was a great deal of hard disk churn-

ing between slides, and it was often several seconds before the next slide was ready, so we clearly didn't have enough RAM at 8Mb (the resolution was 1,024 by 768 and 256 colours on an S3 card). Although we didn't test it, Charisma provides a stand-alone screen show option that would have converted all our slides to bitmap images and copied those — along with any multimedia files and the core run-time program — to floppy disks for replay on any Windows machine. We found no information on the best way to obtain quick-turnaround 35mm slide processing for our Charisma files.

Charisma's slide-show capabilities are stronger than the competition's, but our less-than-smooth experience with builds and the lack of ability to view separate layers in the slide editor limit its value. ▶

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Very sound!

Quick-access icons let us automatically play a sound effect (from a MIDI or .WAV file) or multimedia (AVI) clip when the slide appeared on the screen, or play music (from a similar file, or using an audio CD) in the background. For each of these, we merely had to click on the icon to pop up Charisma's Media Manager, and then select the file. We also liked the ability to attach specific sound files to the 12 function keys on our keyboard so that we could play them anytime during a screen show.

We found it easy to use the hyperlinks command to attach sounds to graphics objects, but when we used the same procedure to play a movie (AVI) file, the screen show would not start and we repeatedly got an error message. We resolved the problem by changing the graphics object we had been using for the button and then resetting the hyperlink. We were also able to use OLE to embed multimedia files, but the direct links provided by Charisma worked more smoothly and quickly. In this respect, Charisma equals the multimedia capabilities of Asymetrix Compel.

There is no internal way to animate objects within slides. However, Charisma can play Autodesk FLI and FLC animation files through its normal Media Manager and hyperlink procedures. Charisma supports any TWAIN-compatible scanner for importing bit maps.

Our Test Centre judges had a high regard for Charisma's overall output — the quality is up with the best we've seen. The gradients in the bar chart were very crisp and the greys distinguishable. Fonts were smooth with little evidence of jaggies.

Fast and slow

On our test machine, a Compaq Deskpro 386/20e, Charisma was relatively quick to print, at about nine minutes for our eight-page presentation. On the other hand, it took a long time to return cursor control after issuing the print command, which could be a function of RAM shortage. Printing from a Gateway 2000 33MHz 486, the times were con-

BENCHMARKS

Windows presentation graphics software

(TIMES IN MINUTES:SECONDS)

	Micrografx Charisma Version 4.0 (on 486)	Micrografx Charisma Version 4.0 (on 386)	Freelance Graphics Version 2.0 (on 386)
Regain cursor control after print command	01:00	04:18	00:37
Print eight-page black-and-white presentation	06:08	09:07	12:36

486 platform was Gateway 2000 486/33 with 8Mb; 386 platform was Compaq DeskPro 386/20e with 8Mb

siderably faster. The overall print time came down to 6 minutes and the cursor control returned after one minute. Micrografx gives minimum hardware requirements as a 33MHz 486 with 8Mb of RAM (16Mb recommended); we can only concur.

Charisma 4.0 comes with an all-new manual that's 600-odd pages long, well written and clearly organised. Charisma's manual is especially welcome given the current trend — seen in the latest Harvard and Freelance Windows versions — to forsake a complete manual and rely instead on Windows' on-screen help. Charisma's on-screen help is clear, as is the context-sensitive help on most of Charisma's dialog boxes.

A 20-page tutorial in the manual runs you through Charisma's basics, and an on-line but not interactive walk-through visually reviews Charisma's major goodies. There's a fold-out quick-reference card, but it could use one more page containing the main menu and submenus.

Charisma 4.0 is such a substantial upgrade to the old version that it might be better considered a new product entirely. But the name nevertheless invites comparison, and what the new package has gained in features, it has lost in agility.

The old Charisma had snappy graphics and — for its day — the best drawing tools. Charisma 4.0 is slow and a glutton for Windows resources. On our PC, with 8Mb of RAM, we occasionally ran out of

memory running even a 12-slide screen show with a few OLE objects. Moreover, in many cases working the menus required extra steps, as did the template arrangement (especially the lack of a master page) and the limited-function outliner. These made working with Charisma 4.0 more of a chore than it needs to be.

What distinguishes Charisma is its combination of multimedia savvy and high-end drawing tricks. If you have a fast machine with memory to burn, Charisma is a worth a look right now. ■

Charisma version 4.0

This long-awaited upgrade to Charisma sets a new ceiling on presentation and multimedia capabilities combined with high-quality drawing and rendering tools. It's a package uniquely suited to both beginners and professionals, but its debut is marred by slow performance and resource glut.

Pros: Terrific multimedia and screen-show capabilities; clip art and multimedia CD-ROM disk; outstandingly versatile drawing and rendering tools for a presentation package.

Cons: No organisation chart facility; consumes too much memory and resources; much slower than previous Charisma; glitches in outline importing.

Price: \$695

Micrografx
Phone: (02) 415 2642

REVIEW OF REVIEWS

Products reviewed
in previous issues

BB = BEST BUY

In this issue of *PC World* we look at 486SX computers, databases and presentation software. Perhaps you are interested in a product that is not included. Below we have listed all of the databases, 486SX computers and presentation software we have looked at in recent issues. Prices are not included, since they are constantly changing.

For a complete list of comparisons, reviews and first looks, and features, see *PC World's* six-monthly index, in the December/January issue and July each year. If you would like to receive a copy of a previously published article send \$5 for each article to:

Review Copy
Australian PC World
88 Christie Street, St Leonards NSW 2065

486SX COMPUTERS

• Acer AcerPower 425S

25MHz 486SX ISA computer

Pros: Excellent expandability; clever modular case design; integrated 24-bit VGA

Cons: Slow hard drive performance

Summary: A cleverly designed and simple to upgrade PC with average performance, with the exception of the slow hard drive

Acer Computers Australia

Phone: (02) 418 8044

Product Comparison, April 1993

• Amstrad PC6486SX

25MHz 486SX ISA computer

Pros: Good expansion

Cons: Slowest in all tests of the group

Summary: Slow system with very good expansion

Amstrad

Phone: (02) 316 5289

Product Comparison, April 1993

• Arrow 486SX 25MHz

25MHz 486SX ISA computer

Pros: Very fast CPU and disk system, lots of bundled software

Cons: None significant

Summary: Very fast with quality components and bundled software

All Data Australia

Phone: (03) 794 5799

Product Comparison, April 1993

• Compaq Presario

All-in-one 486SX PC

Pros: Compact design, self-configuring, good documentation and expandability

Cons: Lacks in-built communications

Summary: This PC gives you the power of Windows computing without the fuss

Compaq Computer Australia

Phone: (02) 911 1999

Review, Dec/Jan 1994

• Compaq ProLinea 4/25S

25MHz 486SX ISA computer

Pros: Excellent workmanship

Cons: None significant

Summary: Top workmanship, average performance

Compaq Computer Australia

Phone: (02) 911 1999

Product Comparison, April 1993

• DECpc 425s/LP

25MHz 486SX ISA computer

Pros: Fast hard drive, very fast VGA, excellent workmanship

Cons: None significant

Summary: A fast system particularly for Windows, with excellent workmanship

Digital Equipment Corporation

Phone: 008 021 246

Product Comparison, April 1993

• HP Vectra 486/25N

25MHz 486SX ISA computer

Pros: Excellent workmanship

Cons: None significant

Summary: A cleverly-designed system with average performance

Hewlett-Packard Australia

Phone: (03) 272 2895

Product Comparison, April 1993

• Ipex 486SX-25

25MHz 486SX ISA computer

Pros: Very good expandability

Cons: Sketchy documentation

Summary: A system with slightly above average performance

Ipex Information Technology

Phone: (03) 242 5000

Product Comparison, April 1993

• LEO 486SX-25

25MHz 486SX ISA computer

Pros: Very good expandability and software compatibility

Cons: A little slow with graphics

Summary: A solid system with average performance

Leo Computers

Phone: (02) 822 4833

Product Comparison, April 1993

BB • Microarts 486-25 Power Pro Stealth VLB

25MHz 486SX ISA computer

Pros: The fastest system in every category

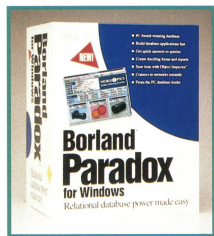
Cons: None significant

Summary: An exceptionally fast system with state-of-the-art peripherals

Microarts Australia

Phone: (03) 696 5955

Product Comparison, April 1993



• Mitac UPstation 4062F/M

25MHz 486SX ISA computer
Pros: Excellent expandability
Cons: None significant
Summary: Overall an average performer with great expandability
 Mitac Australia
 Phone: (03) 585 1055
 Product Comparison, April 1993

• NEC 486SX/25i

25MHz 486SX ISA computer
Pros: Very good workmanship, design, and expandability
Cons: Average performance
Summary: Well designed with average performance
 NEC ISA
 Phone: (02) 930 2000
 Product Comparison, April 1993

• PC Direct 486up-SX25

25MHz 486SX ISA computer
Pros: Excellent VGA performance
Cons: Upgrades are more cumbersome than average
Summary: Average performance with the exception of the fast graphics card
 PC Direct
 Phone: (02) 439 1000
 Product Comparison, April 1993

DATABASES

• AceFile 2.0

Windows database
Pros: Simple, graphs, cross-tabs
Cons: Forces use of macros too often, lacking in high-end features
Summary: For simple database projects that require a minimal amount of file linking it will handle your work well, if you don't mind writing macros to get custom features
 Techflow
 Phone: (02) 971 4311
 Product Comparison, September 1993

BB • Approach for Windows 2.0

Windows database
Pros: Simple design tools, great point-and-click interface
Cons: Lacks programmability and some high-end tools
Summary: Tries to be the jack-of-all-trades without being a master of none
 Sourceware
 Phone: (02) 427 7999
 Product Comparison, September 1993



• DataEase Express for Windows 1.0

Windows database
Pros: Good range of features, Query By Model tool
Cons: Spotty user interface and documentation
Summary: Already has some of the ease of use features it needs, but with clearer documentation and better signposts in the user interface it could hit the mark precisely for its intended market
 DataEase Australia
 Phone: (02) 876 6911
 Product Comparison, September 1993

BB • FileMaker Pro for Windows

Windows database
Pros: Simple, clean, Macintosh compatibility
Cons: Lacking in high-end features
Summary: A simple non-relational database that offers ease of use and excellent performance
 Claris
 Phone: (02) 452 8585
 Product Comparison, September 1993

BB • Microsoft Access 1.0

Windows database
Pros: Powerful, good design tools, macros
Cons: Difficult to learn, idiosyncratic
Summary: A powerful tool that has most of the features that any power user or application developer could need, plus a few extras
 Microsoft
 Phone: (02) 870 2100
 Product Comparison, September 1993

• Paradox for Windows 1.0

Windows database
Pros: Powerful, good query tools, good programming language
Cons: Difficult to summarise calculated fields
Summary: Easiest for creating data files and customising data entry
 Borland International
 Phone: (02) 911 1000
 Product Comparison, September 1993

• Superbase 2.0 for Windows

Windows database
Pros: Powerful, straightforward
Cons: Few design tools, no built-in macros
Summary: The granddaddy of Windows databases. The only high-end program reviewed in its second major release
 Software Publishing Corporation
 Phone: (02) 418 7188
 Product Comparison, September 1993

PRESENTATION SOFTWARE

• Harvard Graphics 2.0

Windows presentation software
Pros: State-of-the-art screen shows; multi-media and conferencing capabilities; automatic help screens
Cons: Intrusive dialogue boxes in text entry; lacks animation display facility
Summary: Leads the field in its snazzy screen shows and new conferencing features
 Software Publishing Corporation
 Phone: (02) 418 7188
 Review, Dec/Jan 1994

• WordPerfect Presentations 2.0

Windows presentation software
Pros: Feature-laden, over 1,000 clip art images
Cons: Steep learning curve
Summary: A program for those who find Lotus Freelance or Microsoft PowerPoint limiting in their options
 WordPerfect Pacific
 Phone: (02) 415 5222
 First Look, Dec/Jan 1994

Playing games on CompuServe

By Neale 'Top Gun' Morison

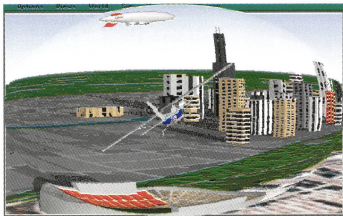
Lists are intrinsically funny. I'm not even sure why it works, but if you get the right person to read a shopping list they can really crack you up. This is very fortunate for CompuServe, because CompuServe's interface consists entirely of lists, and arguably that's all CompuServe is, just a great big list in cyberspace.

I hereby present the following list:

Science Trivia Quiz
The Grailier Whiz Quiz
Hollywood Hotline (TM)/ShowBizQuiz(TM)
Classic Adventure
Enhanced Adventure
CastleQuest
BlackDragon
Biorhythms
Hollywood by Marilyn Beck/Stacy Smith
Roger Ebert's Movie Reviews
Hangman
Soap Opera Summaries
Description of Extended Game Services

This is the list you get when you select games from the icon menu in WinCIM. Playing games on CompuServe could be considered a fairly luxurious way to behave. Given that the connection runs at a maximum of 9,600bit/sec, and that every second is costing money, there's no opportunity for real-time interactive high-resolution colour games across the modem line.

However, simple text-based games are possible, and if they're well enough designed they can be entertaining and satisfying. Quizzes are easy to manage, and they can be fun. Within the Science Trivia Quiz section the suggested age for quizzes is 16 and up. The science trivia quiz asks you thirty multiple choice questions on biology, chemistry and physics. It's pitched at about middle high school level. One crucial item of knowledge, unavailable through any amount of swotting in textbooks, is the secret code that helps you to



A flight simulator vista, complete with zeppelin

escape the questions. It's /EXIT, as you discover if you read the instructions. If you don't you will be unable to escape until you've answered all 30 questions, and unless you've recently memorised the coefficients of expansion for copper and iron, you may find yourself severely embarrassed.

The Show Biz Quiz is very comprehensive, with categories like Frank Sinatra Challenge, Star Trek TV Show Trivia Quiz, Twilight Zone test, the Career of Judy Garland, Star Wars Saga, Clint Eastwood Make My Day, Films of Fred Astaire, Heavy Metal Music Quiz, Clark Gable, Bruce Springsteen, Marilyn Monroe memoirs, 8 levels of ShowBiz Quiz, 4 Beatles' quizzes, pop music quizzes for each of the decades starting with 1950, James Bond, Academy Awards quizzes for each of the decades from the '30s to the '80s, Play Casablanca Again, Sam, Leave it to Beaver, and Cult Films to list but a few.

What, no Troggs?

Some of the quizzes are a little disappointing, although they could well be of deep interest to the real trivia buffs. For example, the '70s pop quiz just gives you a song and a label and asks you to name the artist, which after a while becomes dull, especially if you stopped listening to pop music in 1968. None of the songs were by the Troggs, or Gary Puckett and the

Union Gap. The Adventure game looked promising. As the instructions explained, "The object of the game is to explore a cave, find a quantity of treasures and deposit them back in the building. Simple? Good luck! (Be wary of the Centipede's Lair!)"

Good, healthy, non-violent, greed motivated stuff.

Playing the game brought on a wave of nostalgia. It was like the first Zork games on CP/M machines, which I was playing in 1984 or so but which probably started a little earlier. The game only understands two-word sentences with a choice of about five verbs. You type in funny pidgin messages to move in various directions and snaffle treasures. I miss those games, with their pithy little descriptions of jewel filled caves and underground streams. You needed imagination in those days, and a hell of a lot of time on your hands. This game had one of those cute blundering round in the forest sections, where you enter a forest and it makes no particular difference which direction you go, because the game software randomly selects where you end up. Not really a good choice for playing live on CompuServe. It would make much more sense to zip up the game and download it. Looks like other cyberspacers felt the same way. The most recent high score was 33, out of 751.

THE LOTTO FACTORY

VER 2.1

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LOTTO
PLAYERS

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THE LOTTO FACTORY SCIENTIFICALLY INCREASES YOUR CHANCES OF
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What How and Why?

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The Lotto Factory can help you WIN by scientifically increasing your chances! Can you choose the winning numbers? - Random numbers follow statistical regularity, ie drawn numbers follow trends. The Lotto Factory includes a powerful HARMONIC AUTOCORRELATION Trend-Sorter to select your numbers (as used by Scientists, Mathematicians, Engineers, in Audio Astronomy, Machine-Vision, Stock Market Predictions etc. to find patterns in numbers).

(2) Then choose games very intelligently to include as many numbers as possible while incurring minimal cost.

*Is the cost of covering more numbers too great? - The Lotto Factory includes 254 GUARANTEED SYSTEMS that allow you to cover more numbers with less games, eg cover 16 number for \$16 and eg. play all systems up to a system 45.

(3) Now save some more money by statistically reducing the number of games that have to be played.

Do You play redundant games? Statisticians say that a game of 6 numbers will not repeat for 78000 years, any combination of 9 numbers in a game of 6 will not repeat for 1200 years and any combination of 4 numbers in a game of 6 will not repeat for 95 years.

The Lotto Factory will REDUCE the cost of a system entry by up to half again by deleting games that are REDUNDANT because they are not likely to repeat in your lifetime. Don't play games based on past winnings!

(4) Next, use some very advanced statistics to save even more money on your system entry by reducing the number of games that have to be played even further.

It has been discovered that if the separate numbers in all possible combinations of games are added up eg. 1+2+3+4+5+6 = 21 (smallest), and 45+44+43+42+41+40 = 255 (largest) then all the separate sums will lie between 21 and 255 with the center/average 138 (a 45 number system). If these additions are shown graphically a bell shape is produced. What this means in real terms is that the majority of games drawn will sum to a region close to the center 138 and your winning chances can be predicted exactly, eg. 80% of all possible drawn games will sum to lie between 100 and 176. The Lotto Factory will now let you choose your own chance of winning (in this case 80%) by assigning the sums of all your games played lie within this % winning region specified by you.

(5) Now use your printer to print your coupons.

Filling out coupons by hand is tedious, time consuming and error prone. The Lotto Factory will print your coupons for you. Supports a vast number of dot matrix, bubble ink jet, and laser printers.

Trademarks belong to their respective registered owners.

INDEPENDENT ASSESSMENT

Features	THE LOTTO FACTORY	LOTTO NET ULTIMA	LOTTO NET TURBO 500
Special Systems Guaranteed	Yes	No	No
Special Systems to cover more numbers while playing less games	Yes	Yes	Yes
Number of Special Systems included	254	27	27
Highest Special System Supported	45	20	20
Ability to Generate your own systems	Yes	No	No
PRINTS Lotto Pools Coupons	Yes	No	No
*Autocorrelation Pattern Predictor chooses then numbers for you	Yes	No	No
Previous Draw Game Reduction	Yes	No	No
Bell curve reduction	Yes	No	No
Mouse Support	Yes	No	No
Multiplexable Windows	Yes	No	No
Bell Curve Analyses	Yes	No	No
Most Least Analyses	Yes	No	No
Following Pairs Analyses	Yes	No	No
** Highest Winning System Analyses	Yes	Yes	No
Odd-Even Analyses	Yes	No	No
Number of Databases Included	13	4	4
User Defined Databases	Yes	No	No
Compares and Calculates Winnings	Yes	Yes	Yes
Full Play/AN System over Any Range	Yes	No	No
Text Editor (Edit Save Print all outputs)	Yes	No	No
Cost (including package & handling)	\$185.00	\$216.00	\$135.00

*Calculates a set of numbers for any system that has won most frequently over any past draw history range. **Very Powerful - If there is a pattern in the previous draws this option will find it.

The Lotto Factory - By Far Superior

MONEY-BACK REFUND - We Guarantee our software to be superior, if you can find ANY current software on the market that has more features, and is superior to The Lotto Factory your money will be refunded in full.

COMPETITIVE CROSSGRADE - If you have purchased another lotto/pools software package, Enquire about our crossgrade prices.

COMPREHENSIVE INSTRUCTION MANUAL

Included in this software package is an easy to follow manual with full instructions on how to use all of the Lotto/Pools tools most effectively.

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Perhaps the interesting part of that games list was the Biorhythms entry. This is a fantastic convenience, and it's odd to find so useful a service listed under games. Biorhythms asks you your name and date of birth, and produces a graphical biorhythms chart and a summary that tells you what your biorhythms are going to do to you on certain days. Its pretty grisly in some cases, so be prepared.

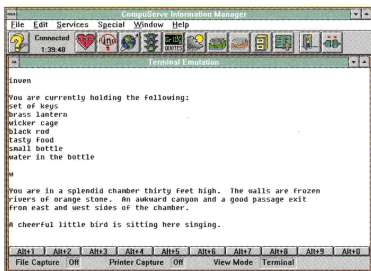
DOOM Escape

If you want the latest in full screen, full colour, full motion, full on games, GO HOTGAMES to see the latest on offer. This is where you can download the notorious DOOM, already banned on corporate networks throughout the world.

As the description says, "DOOM v1.2 is a lightning-fast, virtual reality, action-oriented slugathon! You're plunged into a brutal 3-D world, and to escape alive, you must outfight legions of grisly fiends and solve DOOM's lethal puzzles. As a space trooper equipped with a variety of weapons and technological artifacts, it all comes down to who's tougher: you or them.

And you don't need the reflexes of a hyperactive eight-year-old to win! To escape DOOM, you need both brains and the killer instinct. Please be aware that DOOM portrays graphic violence and may not be suitable for younger children."

DOOM may not be suitable for getting anywhere near your corporate networks, either, because it allows up to four players to network together and run around shoot-banging aliens and each other in the same virtual reality. It's so popular that you can bet in every company at least a few people will be doing this on the network when they think everybody else has gone home. Unfortunately it sends so much information over the network to do this that all work grinds to a halt. The size of this file is two and a quarter megabytes, and at 9,600bit/sec it takes about 50 minutes to download. Better to form a consortium of doomers and download once, and copy many times.



The text interface of the Classic Adventure game leaves much to the imagination, not a bad thing

What CompuServe really lends itself to is the forums, and games buffs love to get together on their pet obsessions.

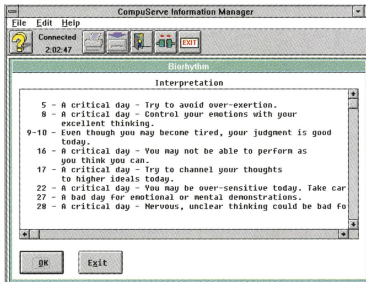
There's the general GAMERS forum where you can exchange information and strategies for DOOM and many other games. Some games have not only devoted followers but a multitude of satellite developers creating add ons. One such game is Microsoft's Flight Simulator. You can download the fix that upgrades FS5 to 5.0a from CompuServe, and if you go FSFORUM you can join in the babble of all the other Flight Simulator buffs.

You can download add-ons like

scenery, adventures, aircraft and bits of aircraft, and get vital information on how to use your controls to avoid those embarrassing crashes.

You can even soup up your existing virtual aircraft. One offering is described as "The Old Cessna with 4 times the horsepower. Jump off the runway and do an immediate loop. Very controllable. Also included is an airspeed indicator for the higher speeds." You can't help visualising a cyber-globe, its skies full of tiny buzzing virtual aircraft, all very much up in the clouds.

• Neale Morison can be reached by e-mail on CompuServe 100250,1133



A handy summary of your biorhythms information, available from the Biorhythms option in the games section

Not just another 'chip' off the old block!

While others are talking, we're delivering.
High performance controller cards & memory upgrades.
Save yourself much rubble & call us.

SCSI CONTROLLERS

ISA - VESA VL - EISA - PCI Bus Systems
All with automatic, switchless installation and
Corel/SCSI software ensures complete device support

IDE CONTROLLERS

8 Bit - ISA - VESA VL - Multi I/O - PCI Bus Systems
Various controllers can accelerate performance
20 - 500% for standard IDE drives.



NEW PRODUCT RELEASE

- PCIport** - High performance SCSI Host Adaptor for PCI bus systems
- sIDE-2/PCI** - High performance Enhanced IDE controller for PCI local bus system
- VESApport** - High performance SCSI Host adaptor for VL-Bus systems

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MAKE YOUR VOTE COUNT IN THE ALL-TIME PC WORLD AWARDS — AND WIN THE SUPERFAST DECpc XL 566



Which is the very best software program ever — the one that you can't live without and can't even imagine how you lived before you found it?

Which PC turned you on to personal computing?

What's the greatest product that never caught on? The worst product that did?

PC World wants to know which PC products you rate as the all-time greatest — that is, the products that broke new ground and established new directions for personal computing.

To celebrate our 10th anniversary we're having a super-special, one-time-only version of the PC World Awards to recognise our readers' choices for the most important products in the history of personal computing. In December our readers short-listed the products that appear on the ballot. Now it's time to select the winners.

We're looking for products that stand out as milestones. (They may not be the "best" or most fully-featured products — we assume that the latest products meet those criteria.) Rather, we're looking for the products that first tapped into the power, the potential and the vision of the PC.

Don't miss this opportunity to take part in a poll that everyone in the PC industry will be talking about. Please cast your votes on the ballot on the facing page and mail or fax it back to us.

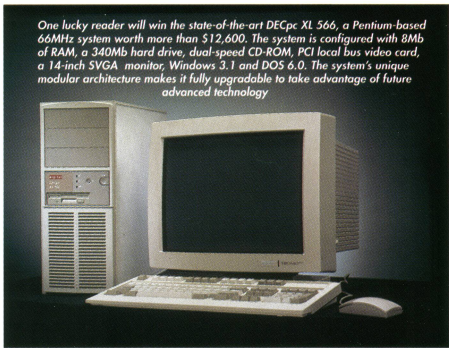
And, for one lucky reader, the rewards will be great.

All ballots received will be entered in a draw to win the state-of-the-art Pentium-based 66MHz DECpc XL 566 — a system worth more than \$12,600 as configured.

The DECpc XL is ideal for users who want the maximum system performance available. It is perfect for intensive users of business applications or high-end graphics, and is fully upgradable to more advanced chips.

To qualify for this super system, complete the ballot for the PC World All-Time Awards, answer the Trivia Question correctly and return by mail or fax. We'll announce the winners of the Awards — and of the DECpc XL 566 — at a gala dinner at our PC World Expo in Sydney in May.

One lucky reader will win the state-of-the-art DECpc XL 566, a Pentium-based 66MHz system worth more than \$12,600. The system is configured with 8Mb of RAM, a 340Mb hard drive, dual-speed CD-ROM, PCI local bus video card, a 14-inch SVGA monitor, Windows 3.1 and DOS 6.0. The system's unique modular architecture makes it fully upgradable to take advantage of future advanced technology



THE ALL-TIME PC WORLD AWARDS BALLOT

Please tick one box in each category...

HARDWARE

BEST PERSONAL COMPUTER (desktop)

- IBM XT ☐
Compaq DeskPro ☐
Apple Macintosh ☐
Commodore 64 ☐
Tandy TRS 80 ☐
Other ☐

BEST PERSONAL COMPUTER (notebook/mobile)

- Toshiba T1200 ☐
Compaq LTE Lite ☐
Apple PowerBook ☐
TI TravelMate 4000 ☐
Osborne Portable ☐
Other ☐

BEST INPUT DEVICE

- Microsoft Mouse ☐
Logitech Mouse ☐
Sprinter Dycam camera ☐
Caere OmniScan ☐
HP ScanJet ☐
Other ☐

BEST OUTPUT DEVICE

- NEC Multisync monitor ☐
HP LaserJet II ☐
Epson FX80 dot matrix ☐
Canon BubbleJet ☐
Apple LaserWriter ☐
Other ☐

BEST PERIPHERAL DEVICE

- Sony CD-ROM drive ☐
Creative Technology ☐
SoundBlaster card ☐
AST 6-Pack ☐
NetComm SmartModem ☐
Hercules - graphics emulation ☐
Intel Maths Co-processor ☐
Other ☐

SOFTWARE

BEST WORD PROCESSOR

- WordStar ☐
WordPerfect ☐
Multimate ☐
AmiPro ☐
Word for Windows ☐
Other ☐

BEST SPREADSHEET

- VisiCalc ☐
Lotus 1-2-3 ☐
Microsoft Excel ☐
Borland Quattro Pro ☐
Supercalc ☐
Other ☐

BEST DATABASE

- dBase II ☐
Microsoft Access ☐
Borland Paradox ☐
SPC Superbase ☐
Odyssey Development ISYS ☐
Other ☐

BEST ELECTRONIC MAIL

- MS Mail ☐
Lotus ccMail ☐
WordPerfect Office ☐
QuickMail ☐
Other ☐

BEST GAME OR ENTERTAINMENT SOFTWARE

- Zork ☐
Tetris ☐
Flight Simulator ☐
Leisure Suit Larry ☐
Castle Wolfenstein ☐
Other ☐

BEST OPERATING SYSTEM

- MS-DOS ☐
Windows ☐
CPM ☐
SCO Unix ☐
OS/2 ☐
Other ☐

BEST UTILITY

- Norton Utilities ☐
XTree Gold ☐
Fastback Plus ☐
Norton AntiVirus ☐
PC Tools ☐
Other ☐

BEST GRAPHICS — DRAWING/PAINT

- CorelDraw ☐
SuperPaint ☐
PC Paint ☐
Adobe Photoshop ☐
Adobe Illustrator ☐
Other ☐

BEST GRAPHICS — PRESENTATION/GRAPHING

- Harvard Graphics ☐
Aldus Persuasion ☐
Lotus Freelance ☐
CricketGraph ☐
DeltaGraph ☐
Other ☐

BEST PERSONAL PRODUCTIVITY SOFTWARE

- Borland SideKick ☐
Lotus Organizer ☐
Softcase Tracker ☐
Symantec Act! ☐
Polaris PackRat ☐
Other ☐

BEST PROGRAMMING LANGUAGE

- Microsoft BASIC ☐
Borland Turbo Pascal ☐
Computer Associates Clipper ☐
Borland C++ ☐
Microsoft VisualBasic ☐
Other ☐

NETWORK SOFTWARE

- Novell NetWare ☐
Microsoft LAN Manager ☐
Microsoft Windows NT ☐
Artisoft LANtastic ☐
Banyan Vines ☐
Other ☐

DESKTOP PUBLISHING

- Aldus PageMaker ☐
QuarkXPress ☐
MS Publish ☐
Ventura Publisher ☐
Other ☐

GENERAL

MOST IMPORTANT COMPANY

- IBM ☐
Apple ☐
Intel ☐
Microsoft ☐
Compaq ☐
Other ☐

BEST AUSTRALIAN PRODUCT

- Odyssey Development ISYS ☐
NetComm modem ☐
Softcase Tracker ☐
Sybiz ☐
Microbee PC ☐
Other ☐

What was the first personal computer that convinced you that you "could not do without a PC"?

What software was the first to convince you that you "could not do without it"?

What was the best personal computer product that should have succeeded but did not? (This may be hardware, software or peripheral.)

What was the worst personal computer product that should not have succeeded but did?

Name

Address

Postcode

Phone

Trivia Question: How old is Australian PC World?

Fill out the ballot on this page and post it to:

PC WORLD AWARDS
PO Box 295
St Leonards NSW 2065

Or send it by fax: (02) 439 5512

Entries close 28th April.
The draw will take place
29th April, 1994

Windows SPREADSHEETS

These four top Windows spreadsheet and analysis packages are among the hottest on the desktop. In performance and features they are closely matched. However, one stands out for ease of use, and another is a lot cheaper than the rest

Snooping around an unfamiliar PC, and there's an excellent chance you'll run across a spreadsheet program tucked away on the hard drive. Spreadsheets have always been popular, and they've become more so as their versatility has increased. Besides being world class number crunchers, Windows-based spreadsheets now hold their own against some dedicated graphics and drawing packages. They also make excellent substitutes for stand-alone database software.

In fact, a Microsoft survey showed that a high percentage of Excel users treat the program as a flat-file database. Spreadsheet functionality continues to expand at a rate that the typical user has a hard time keeping up with.

This roundup will help you determine which Windows spreadsheet best suits your needs — no simple task, since this latest crop is radically improved and filled with more features than ever. Although vendors continue to upgrade their non-Windows spreadsheets, the real action is in the Windows products, which leave their DOS counterparts in the dust when it comes to ease of use and functionality.

Today's Windows-based spreadsheets include sophisticated application development tools that extend well beyond simple macro capability,

and some have specialised analysis options for statistical and engineering applications. For workgroup settings, flexible scenario management tools and even e-mail are accessible directly from the spreadsheet environment. The end result? Spreadsheets can now manipulate and analyse more information, better than ever before. They give you the tools to pull almost any set of data into a familiar environment and then work with that data more intelligently.

Perhaps the most significant trend in spreadsheets is in multidimensional data modelling, which lets you view and summarise information in a database table in ways you may never have dreamed possible. Lotus Improv sets the standard, and Improv-like features now appear in the latest versions of Microsoft Excel and Borland's Quattro Pro for Windows. But improving day-to-day usability remains high on the priority list, and the general trend is towards guiding the user gently through complex procedures — or even performing them automatically.

The lineup

We tested and analysed the three leading Windows spreadsheets: Lotus 1-2-3 release 4.01, Microsoft Excel 5.0 and Quattro Pro 5.0. The Excel version we looked at was pre-production software, but enough of

the code was final for us to feel comfortable in our analysis.

We also include Lotus Improv for Windows release 2.1, a data modelling tool that can substitute for a traditional spreadsheet in certain tasks. Computer Associates' CA-Compete, another major product that combines a traditional spreadsheet with a multidimensional modelling tool, is being upgraded and was not available for this review.

Multidimensional data modelling has become such a hot topic that we devoted a sidebar to it. In "Multidimensional data modelling comes of age", we put the four reviewed spreadsheets through a typical data-modelling exercise. Improv is easily your best bet in this category. And in a second sidebar, we take a look at the top DOS spreadsheets (see "DOS spreadsheets: not dead yet").

Deja vu . . . and some key differences

Spreadsheet manufacturers have no qualms about borrowing successful features from their competitors. Over the years, 1-2-3, Quattro Pro and Excel have evolved to be strikingly similar in many areas — good news for the user, since it simplifies the transition from one product to another.

For example, they all make it easy to organise your work by allow-

SHOOTOUT

By John Walkenbach

ing a multiple-page worksheet format, also called a 3-D structure, and they all display tabs that let you jump quickly to a desired page in the worksheet notebook. They have customisable icon tool bars (variously called SmartIcon palettes and SpeedBars) that serve as shortcuts for common features. In all these products, right-clicking a selection displays a context-sensitive shortcut menu. And of course they all allow macro recording, offer extensive charting, and let you work with field- and record-based worksheet databases as well as external database tables.

In addition to these common attributes, each product has a set of unique features that may affect your buying decisions. 1-2-3 for Windows, for example, offers keystroke compatibility with 1-2-3 for DOS (possibly the most popular program ever), has some unique text formatting options, and is the most versatile when it comes to managing different scenarios. Excel's outliner and table recognition capability are without peer, and the PivotTable feature is nicely integrated.

Its clever TipWizard can teach you shortcuts while you work. Quattro Pro for Windows' Object Help and interactive tutors let you learn the basics of spreadsheeting using your own data. And its Workgroup Desktop adds new

meaning to the term data sharing by letting you exchange data easily across the LAN or even across an online service. While Improv lacks many of the features found in the big three spreadsheets, its data modelling and global formulas go beyond anything they can manage.

Ease of use features

If you're like most spreadsheet users, you spend a lot of time copying and moving cells and ranges. You can use a command for these operations, but direct drag-and-drop manipulation,

Continued page 120

BEST BUYS GO TO EXCEL AND QUATTRO PRO



In this heated contest, Microsoft Excel 5.0 and Borland's Quattro Pro 5.0 for Windows Standard Edition emerged as Best Buys.

Excel is clearly the most robust spreadsheet product available. It's bursting at the seams with innovative features such as automatic table recognition, data table pivoting, simple and intuitive data filtering, a Visual Basic macro language and OLE 2.0 support. And when Microsoft finally got around to adding multipage worksheet capabilities, the company did it in a big way: Excel 5.0 allows as many sheets in a workbook as system memory allows.

The best part is that this program remains the most useable spreadsheet for users of all levels, and the new TipWizard makes it easy to learn the shortcuts while you're working.

Quattro Pro for Windows may lack a few of Excel's more sophisticated ease of use features, but it doesn't lag far behind. Version 5.0 really pushes the envelope this time, incorporating dozens of new features and useability enhancements, many of them aimed squarely at dethroning Excel. In some areas, notably graphing and presentations, Quattro Pro is arguably the best Windows spreadsheet available. In addition, it may be the easiest package to learn, thanks to a series of interactive tutors that walk you through common procedures using either your own data or sample worksheet data Quattro supplies.

The Standard Edition's low price secured it a Best Buy. You get a tremendous amount of spreadsheet program for \$195, making Quattro Pro the obvious choice for the price conscious.

MULTIDIMENSIONAL DATA MODELLING COMES OF AGE

Multidimensional data modelling software is quite a mouthful, but it describes a very useful class of programs — those that let you work with data arranged in categories — those such categories or dimensions include products, months, actual versus projected sales, regions, departments, and so on. This type of software has been around for a while, but only recently has it started to show up in spreadsheets. Some users have known about DOS products such as Javelin and TM/1 for years, but no product in this genre has gained as much attention as Lotus Improv. Computer Associates' CA-Compete also fits into this category.

So how do traditional spreadsheets stack up when it comes to manipulating multidimensional data? We found out by performing a standard task with the big three spreadsheets and Improv.

The task

A company needs to track sales to develop sales reports by month, quarter, region, and type (new or existing clients). We created some sample data, entered it into a worksheet in each of the spreadsheet products, and explored how to manipulate this data and develop a variety of cross-tab tables and reports.

For the three traditional spreadsheets, we started out by creating a database with the following fields: Month, Region (West, Central, East), Type (New or Existing), SalesAmt, and NumSales. See the screen shot (Figure 1) for an example of how this data was laid out.

Figure 1. For 1-2-3, Excel and Quattro Pro, our task started with entering a 36-page record database into a worksheet

1-2-3 for Windows

With our test database, the data manipulation options in 1-2-3 are extremely limited. The Tools-Database-Crosstab command can automatically generate a summary table, but you're limited to two dimensions at a time (see Figure 2). For example, you can generate a table that shows the total sales amount by

Figure 2. 1-2-3's TOOLS-DATABASE-CROSTAB command can produce only two-dimensional tables that summarise a single data field

region and month, but if you also want to see sales to new and existing clients in the same table, you're out of luck. The same goes for displaying both the dollar sales and number of sales.

You can, of course, perform a query on the database to select new sales and then generate a cross-tab table with the query results. You could then perform another query to isolate sales to existing customers and then generate another cross-tab table. This process would give you the information you need, but it would be clumsy; it would require several steps, and the results would appear in two different tables.

The cross-tab tables that 1-2-3 generates are static. That means if you change the data, you need to re-create the table. Another limitation is that you have no control over the location of the cross-tab table; it's always placed in a new worksheet. Clearly, multidimensional data modelling isn't 1-2-3's strong suit.

Improv

Importing our 1-2-3 file into Improv proved unhelpful because it can't convert a flat-file database into its multidimensional structure. So we created a new model with four categories. The Months category had six items, the Regions category had three items, the Type category had two items (New and Existing), and the Data category had two items (Dollar Sales and No. of Sales). The entire setup took about 3 minutes.

With the model's structure defined, the next step was to enter the data. In this case we chose to copy the values from our 1-2-3 worksheet and paste them into Improv via the Windows Clipboard. This technique works equally well with any other spreadsheet.

We grouped the Month items into quarters and automatically calculated group totals, a simple task in Improv. Totalling other items was equally easy. For example, we added a new item to the Regions category called All Regions and inserted the global formula All Regions = West + East + Central.

We changed the view by dragging category icons and found that we could produce just about any type of summary report layout in seconds. Furthermore, you can save different views of your data and display them instantly. Updating this model is also easy. Simply add a new month item and enter the new figures.

Improv clearly excelled at this task. We found the program's viewing and grouping options quite flexible and felt more comfortable with this product than with any of the others.

Excel 5.0

After entering the data into a worksheet database, we issued the Data-PivotTable command, which automatically selected the database range we were working on and invoked the four-step PivotTable Wizard. A pivot table is the summary table generated from the original data. The Wizard's dialogue box displayed the field names (as buttons) and a representation of a table layout. We simply dragged the field name buttons to their desired positions as rows, columns, pages or data to be summarised. After

responding to a few more options, Excel created a new table that displayed the results. Source data for a pivot table can be a worksheet database, multiple ranges (which are automatically consolidated), an external database, or even another pivot table.

This table is extremely interactive. For example, you can drag a field name to another location and the table redisplay automatically. It's a simple matter to add or delete item totals or subtotals, or to hide specific items — just right-click the field name and select PivotTable Field for a dialogue box that lets you set these options.

Month	Sales	Profit	Expenses	Total
Jan	\$112	\$66	\$521	\$1,799
Feb	\$171	\$101	\$602	\$1,874
Mar	\$210	\$122	\$721	\$2,053
Apr	\$250	\$151	\$801	\$2,202
May	\$290	\$172	\$902	\$2,364
Jun	\$330	\$193	\$1,003	\$2,526
Total	\$1,563	\$955	\$5,928	\$10,546

Excel's PivotTable feature has lots of options and lets you change the display by dragging the grey field names

A handy tool bar gives you quick access to additional features. We selected the rows for the first three months of the year and created a group called QTR-1. Clicking on an icon hides the detail and shows only the quarter summary.

Excel's pivot tables are made up of actual values, not formulas. So if you change any of the source data, you must remember to issue the Refresh Data command to update the table.

Quattro Pro for Windows

After entering the data in a Quattro Pro worksheet, we selected it and issued the Data Modelling Desktop command, which launched the data modelling application. We specified a hot link via DDE so the results would reflect changes in the data.

Data Modelling Desktop displayed the data in its source window. We chose the fields we wanted to display in a cross-tab table by clicking in the source window, which contains the spreadsheet data, and dragging it to the table. Data Modelling Desktop lets you stack or nest dimensions in its two dimensional table, so you can effectively see more than two dimensions. Unlike Improv and Excel, however, it doesn't let you display slices of the data as pages. But you can filter the data by using a pop-up window to specify values of a single dimension. For example, we were able to limit the display to either new sales or existing sales.

Data Modelling Desktop lets you create groups of items with automatic subtotals. Doing so is tedious, however, since you must hold down <Shift> as you click on each item name in the group. And if you ungroup the items to display the detail, you must manually regroup them again to hide it. Unfortunately, you can't write a macro to automate these procedures.

When we were satisfied with the table, we selected the data and issued the command to copy it to Quattro Pro, again specifying a DDE link. The original worksheet data was linked to Data Modelling Desktop, and the results from this application were linked back to another range in the worksheet. Because of this two-way link, the table can automatically reflect changes in the data. However, the use of an external application to perform this modelling makes things more complicated than necessary. Excel's integrated approach is far preferable.

Improv: a model data modeller

Improv was the easiest and most flexible package to work with — not surprising since it was designed for this type of task. We found that 1-2-3 is not equipped to do this sort of data manipulation. Quattro Pro and Excel accomplished the tasks, but your initial data structure is critically important in determining how much

Month	Region	Sales	Profit	Expenses
Jan	East	\$112	\$66	\$521
Jan	Central	\$171	\$101	\$602
Jan	West	\$210	\$122	\$721
Feb	East	\$171	\$101	\$602
Feb	Central	\$250	\$151	\$801
Feb	West	\$290	\$172	\$902
Mar	East	\$250	\$151	\$801
Mar	Central	\$290	\$172	\$902
Mar	West	\$330	\$193	\$1,003
Apr	East	\$290	\$172	\$902
Apr	Central	\$330	\$193	\$1,003
Apr	West	\$370	\$214	\$1,104
May	East	\$370	\$214	\$1,104
May	Central	\$410	\$235	\$1,205
May	West	\$450	\$256	\$1,306
Jun	East	\$410	\$235	\$1,205
Jun	Central	\$450	\$256	\$1,306
Jun	West	\$490	\$277	\$1,407
Total	East	\$1,563	\$955	\$5,928
Total	Central	\$1,563	\$955	\$5,928
Total	West	\$1,563	\$955	\$5,928

Quattro Pro's Data Modelling Desktop is a separate application linked to the spreadsheet using Dynamic Data Exchange (DDE)

you can manipulate it using Quattro Pro's Data Modelling Desktop or Excel's PivotTable. In fact, you can't use an existing table in most cases. Quattro Pro did not provide an adequate level of flexibility, and relying on a separate application is clumsy.

Excel's surprisingly flexible PivotTable features offered many of the same advantages as Improv. Of the traditional spreadsheets, Excel performed the best. With both Excel and Quattro Pro, however, it's likely you'll need to restructure existing information before you can get any real value out of their data modelling tools. Improv is the obvious choice for heavy-duty tasks such as complex financial analysis, but for most common data modelling needs, Excel is just what the doctor ordered. ■

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found in all spreadsheets except Improv, is usually faster: just select a range and drag it to its new location. To make a copy, simply hold down <Ctrl> while you drag.

When formatting cells, it's often more efficient to select a group of non-contiguous cells to work on. All products except Improv allow this, and Excel and Quattro Pro for Windows even let you name non-contiguous ranges, making it easy to select these cells later or use them in a formula.

In the past, entering or editing data in a cell always occurred on a separate line at the top of the screen and didn't appear in the cell until

application. OLE 2.0 also makes inserting such objects easy with a drag-and-drop procedure. Not many applications support OLE 2.0 yet, but you should see dozens of OLE 2.0-enabled software products on the market by the end of the year.

Analysis options

Even though the vast majority of users still find that a handful of built-in functions serve their formula building needs, spreadsheets have blossomed into veritable analytical powerhouses. These products are chock full of functions, some generally useful, others esoteric.

Excel and Quattro Pro offer a slew of analytical procedures that were formerly the domain of statisti-

rate sheet. But often you need to consolidate separate files into a single worksheet. The products all offer helpful tools, but only Excel and Quattro Pro can perform such consolidations by matching up row and column labels. This means that as long as rows and columns have the same name from worksheet to worksheet, they don't need to be arranged in the same order on each sheet.

Habitual what-iffers will appreciate the scenario management tools found in all the spreadsheets except Improv. These tools let you create different versions of cells or ranges, each with its own name, and display a selected version quickly to see the effects on your formulas. For example, your sales forecast worksheet could have several sales projections based on different scenarios that might occur throughout the year.

All the products except Improv include a sophisticated solver — ideal for complex problems with multiple solutions — that helps you find the best answer by running through the possibilities. For example, if you need to ship products from several different warehouses to various locations, you can use this tool to find the plan that minimises total shipping costs.

Experienced spreadsheet users know that it's all too easy to make a mistake when developing a formula, so built-in auditing tools are there to help you check your work. All the programs here except Improv have these tools.

Looking good

If you're sharing the results of your analysis with others, you want it to look good. Fortunately, you have lots of formatting tools at your disposal. These spreadsheets offer nearly all the options you'll ever need for stylistic formatting, including fonts, colours and alignment options. To format a spreadsheet table quickly, use the automatic table formatting feature found in all but Improv. Oddly, the programs that offer automatic table formatting features come only with preset features; you can't edit them or create your own.

1-2-3 and Excel take top honours

Spreadsheets have blossomed into veritable analytical powerhouses

you pressed <Enter>. Excel and 1-2-3 now support the more convenient in-cell editing, which allows you to edit a cell's contents inside that cell.

Many spreadsheet users need to access data from other applications or use spreadsheet data in other applications. All of these spreadsheets support the Windows Dynamic Data Exchange (DDE) protocol for creating links. Object Linking and Embedding (OLE) lets you take this a step further by inserting an entire object, such as a graphics file or word processing document, from another application. OLE works in the other direction, too: You can insert a spreadsheet object into another application such as a word processor.

Only Excel 5.0 supports the new OLE 2.0 specification, which greatly enhances this type of data sharing; with it you can edit an inserted object from another application without leaving your spreadsheet. When you activate an OLE 2.0 object in an Excel spreadsheet, the menu and tool bar change to those of the originating

cal packages. For those who need sophisticated tools like analysis of variance, correlation, covariance, and other statistical tests, it's nice to be able to access these tools directly in your spreadsheet.

For industrial strength spreadsheets, you may be interested in a useful feature called *arrays*, found in Excel and Quattro Pro. Much like the analogous feature available in programming languages, arrays let you work with a group of cells as a unit. For example, say you have a price list in the range A1..A20. With Quattro Pro, if you insert the formula @ARRAY(A1..A20*1.05) in cell B1, this formula puts its results in the range B1 through B20, so you're effectively increasing all the values by 5 per cent. In effect, you need to change only one formula in order to change multiple cells.

The three-dimensional nature of these products is ideal for working with groups of files, such as a multi-department budget; you can place each department's budget on a sepa-

Windows spreadsheets: all hot performers

	Borland Quattro Pro 5.0 for Windows	Lotus 1-2-3 release 4.01 for Windows	Microsoft Excel 5.0*
Statistical spreadsheet test	STATIC.WB1 (1,617,431 bytes)	STATIC.WK4 (1,144,780 bytes)	STATIC.XLS (1,345,409 bytes)
Open	10	13	32
Print	344	285	127
Copy and paste	84	50	20
Financial spreadsheet test	FINAN.WB1 (294,789 bytes)	FINAN.WK4 (246,324 bytes)	FINAN.XLS (227,907 bytes)
Open	3	5	8
Print	100	112	55
Copy and paste	14	6	7
Recalculation test	RECALC.WB1 (1,788,005 bytes)	RECALC.WK4 (2,477,840 bytes)	RECALC.XLS (2,336,353 bytes)
Recalculation	88	147	50

*Best Buy

Test results are in seconds. Improv not tested because it couldn't produce comparable results.

Methodology Tests were run on a 486DX-33 with 8MB RAM. We used MS-DOS 5.0 and Windows 3.1, both with default installations. We configured Windows with an HP LaserJet III as the default printer, disabled Print Manager and attached a null printer to LPT1. We set the video resolution to 800 by 600 with 256 colours. We used the default installation for each spreadsheet. After each test, we exited the application. Each test was repeated four times for each file, and the results were averaged.

We used three spreadsheets for testing: a statistical spreadsheet (STATIC), a financial spreadsheet (FINAN), and a business spreadsheet (RECALC). The financial and statistical spreadsheets were originally 1-2-3 for DOS spreadsheets. We imported them into the different application formats and saved them for testing. The business spreadsheet, RECALC.XLS was originally an Excel worksheet and was imported and saved in the different application formats. We used the financial and statistical spreadsheets for all tests except recalculation.

Open Timing when we clicked OK in the Open dialogue box and

ended when we regained control of the keyboard.

Print Timing began when we clicked OK in the Open dialogue box and ended when we regained control of the keyboard.

Copy and paste Portions of each spreadsheet were copied and pasted. Timing began when Paste was selected from the menu and ended when we regained control of the keyboard.

Recalculation We used the business spreadsheet for this test. We changed one cell that affected the entire spreadsheet. Timing began when we pressed <Enter> and ended when we regained control of the keyboard.

when it comes to cell formatting options. Both let you apply formatting down to the character level — you can make a single character in a label bold, for instance. They also can rotate text in a cell (although Excel is limited to 90-degree rotation) and control vertical alignment in cells. But perhaps the handiest feature is word wrap within a cell, which is ideal for lengthy headings and comparative charts. If you've ever resorted to trial-and-error spacing to try to centre a label across a group of columns, you'll appreciate the formatting option that does this automatically (and adjusts automatically if you change the column widths). Improv is the only program of the four that doesn't offer at least some of these formatting tools.

Do you regularly work with multiple worksheets in a 3-D file?

Group editing mode will save lots of time. It's a handy feature — format one sheet, and the others follow suit: you don't have to format them separately. All the spreadsheets have formatting tools and group editing mode except Improv.

In some cases, you might want to brighten up your worksheet with something extra — a flow diagram, a circle around particularly important cells, or even clip art. A separate draw layer on the worksheet makes these tasks child's play. Both Excel and 1-2-3 offer this feature.

In the early days of spreadsheets, users were happy to be able to generate a simple chart from their numbers. Now sophisticated graphing is becoming the norm. All these products offer a staggering number of chart types and customisation options. Some even combine analyti-

cal options with charting and let you do things like automatically insert a trend line to describe a data series. It's no longer a hassle to insert a chart next to your numbers, although Improv limits this to a special presentation view outside the spreadsheet. If you need to make changes to a chart, it's much easier to do the editing in the context of the chart's location, rather than in a separate chart window. Both Excel and 1-2-3 allow you to modify a chart directly on a worksheet.

When it's time to put your work on paper, you won't be disappointed. All products offer the standard grab bag of header and footer options, page numbering, print preview, and even automatic compression so your work fits on one page.

If you choose to present your work on screen, you'll be interested >

in a slide-show feature. Both Excel and Quattro Pro offer this (Quattro Pro makes it easier to set up), and both packages let you use a variety of transition effects.

Data access and manipulation

One of the most common spreadsheet activities is working with databases and lists. Spreadsheets have always had the capability to handle record- and field-oriented data, and now all the major products can work directly with tables stored on disk in common database formats.

To isolate records of interest (a process known as querying), Quattro Pro still uses the cumbersome method found in the original 1-2-3 for DOS version, but 1-2-3 for Windows and Excel make database querying easier than ever. With Excel, for example, you can isolate the data you need simply by choosing from pull-down lists in the field headers.

A common method of summarizing data in a database is to generate a cross-tab table. For example, if you have a database that consists of monthly sales data, you could generate a two way cross-tab table showing product names down the left side and regions across the top. The intersection of each row and column displays the total sales for the product for a given region.

Databases can contain a lot of information, and you often need to work with data in more than two dimensions. For example, you might want to extend the analysis to include months. That's when multidimensional database features come to the rescue.

All these products can work in conjunction with external databases, all support multitable relational queries (dynamic links that update your spreadsheet if the information in the database changes), and all have the capability to access SQL databases.

Macros and beyond

Spreadsheet macros, which let you automate a series of operations, date back to the original release of 1-2-3 for DOS. This simple keystroke

recording has evolved significantly, and macro programming languages are quite sophisticated in all these products — yet all but Improv still allow you to record your actions so you can repeat them later. Excel and Improv even include Basic-like macro languages.

There are other ways to customise your spreadsheet applications. For example, you can add new commands to the menus or create custom menus from scratch. In addition, all these products allow advanced users to create custom dialogue boxes that make their applications even easier to use and more professional-looking.

Spreadsheet performance

We tested 1-2-3, Excel and Quattro Pro on opening, printing, and copying and pasting in 1.3Mb and 228K spreadsheet files. We also performed recalculation tests on a 2.3Mb file rich in complex formulas. (Since our tests were designed for traditional spreadsheets, we couldn't get comparable results for Improv and didn't include it in testing.) What did we find? Performance is no longer an issue with the major spreadsheets — they are all very fast.

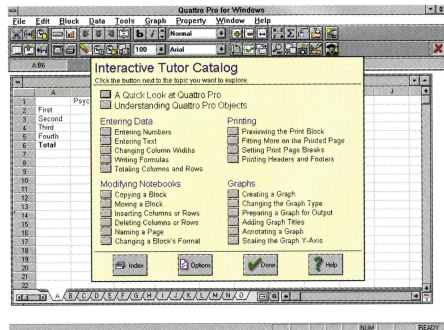
Choose your corporate weapon

Competition was fierce, but Excel 5.0 and the Standard Edition of Quattro Pro 5.0 for Windows emerged the victors. Most users will find that, with the possible exception of Improv, all the products here can easily handle common office tasks such as charting and creating financial models. Nonetheless, Excel is your top choice for features and ease of use, while the budget-minded should look straight to Quattro Pro.

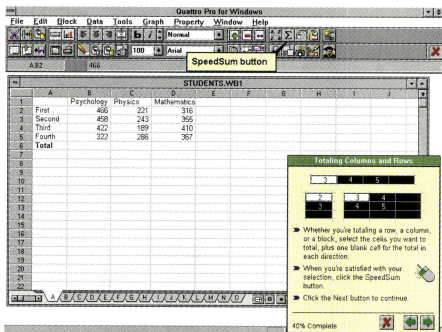
Borland Quattro Pro 5.0 for Windows

The latest upgrade of Quattro Pro is a winner, with a bevy of built-in tools as well as a new scenario manager, multidimensional data modelling, and analysis tools that equal or exceed Excel 5.0's. The basic version, without the workgroup features, is an amazing value at \$195 — less than one third the price of the competition — and earns this product a Best Buy. The Workgroup Edition, however, matches the competition at \$695.

Of all these products, Quattro



Quattro Pro for Windows has an interactive tutor to help you learn the fundamentals



The tutor allows you to use your own worksheet or a sample worksheet

Pro for Windows may be the easiest to learn, thanks to a series of interactive tutors that guide you through common procedures using your worksheet data or sample data provided by the program. For example, you simply call up the Creating a Graph tutorial to get step-by-step instructions. At any time you can hold down <Ctrl> and right-click on virtually any part of the screen (including SpeedBar icons) to get a pop-up, context-sensitive help message. One more click and you'll be reading a help screen on that topic. In the original version of Quattro Pro for Windows, right-clicking a selection results in a handy property inspector dialogue box that lets you adjust any of the selection's properties. Now right-clicking brings up a shortcut menu with appropriate commands, but the inspector is always the first choice.

In the past, if you needed to perform complex numerical analysis, Excel was pretty much your only choice. Excel users may have a sense of déjà vu when they start investigating some of the analytical features in Quattro Pro, which are virtually

dead-ringers for Excel's Analysis ToolPak options.

But Borland added lots of help in the form of Experts (similar in concept to Excel's Wizards), as well as a few new analysis options. One of the more interesting is the loan amortisation selection. Provide a few key variables, and Quattro Pro spits out an entire worksheet complete with formulas and formatting. The latest upgrade also includes array formulas (like those in Excel) and (unlike any other spreadsheet) lets you compile formulas for faster recalculation. The latter is especially useful for large and formula-laden spreadsheets.

When it comes to richness of built-in functions, Quattro Pro outdoes Excel. With a total of 373 @functions, it's a good bet you'll find several to simplify formula building. For example, the new @CONVERT function converts more than 60 units of measurement in categories such as time, distance, liquid and other systems more useful to the scientific community.

The new Scenario Manager is powerful, and many will prefer it to 1-2-3's Version Manager since it's

more flexible. For example, you don't need to explicitly designate ranges you want to include in a version; you can use the entire sheet or even all sheets in the file. It also automatically highlights the cells that change when you display a new version. If you don't want to take the time to learn this feature, you can call on one of the built-in Experts to walk you through the steps to define your scenarios.

Three commands in Quattro Pro actually launch separate applications that work in conjunction with your worksheet. The Database Desktop, for instance, lets you work with external databases and paste or DDE-link the results of queries into a worksheet range.

The Data Modelling Desktop can manipulate and summarise database information. Finally, the Workgroup Desktop lets you share data with other members of workgroups through a variety of messaging services (this feature is available only in the Workgroup Edition). Although these external applications work well, you'll find a few differences in the user interface. For example, right-clicking doesn't bring up a context-sensitive menu, you forgo object help, and there is no undo command.

Quattro Pro 5.0's charting is the best of the bunch. Especially interesting is the program's capability to determine the chart type most appropriate for your data. The charts are easy to work with as well — a few mouse clicks is all it takes to

Borland Quattro Pro 5.0 for Windows

Standard Edition, Workgroup Edition

Pros: Interactive tutors, data modelling, analysis tools, integrated workgroup features

Cons: Inconsistencies in user interface, potentially confusing menus

Price: \$195 (Standard Edition), \$695 (Workgroup Edition)

Borland Australia
Phone: (02) 911 1000
Fax: (02) 911 1011

perform various analyses; you don't need to fiddle with formulas. Chart analysis options include moving averages, aggregation, and linear and exponential trend lines. The only thing we missed was a draw layer. It's easy to insert a chart onto a worksheet, but all chart editing and drawing has to take place in a separate window.

Developing user-oriented applications with Quattro Pro is easy to accomplish. Its unique UI (user interface) Builder command lets you create attractive dialogue boxes and link the controls to worksheet cells. You can often get by without using macros. Customising the icon tool bars, or SpeedBars, is easier than ever; as in the other products, it's basically a drag-and-drop operation. SpeedBars can't be relocated, however; they always appear at the top of the screen.

Any downsides? For one, Quattro Pro falls short in worksheet auditing. Excel and 1-2-3 offer a variety of useful auditing tools, but Quattro Pro has just a few commands, which aren't all that useful. Perhaps an even bigger drawback is the complicated menu structure. Placement of some menu options seems rather arbitrary and makes things a bit overwhelming at times, especially since Quattro Pro is packed to the rafters with features. For example, rather than using traditional dialogue boxes, several commands merely add another SpeedBar to the top of the screen. Select the Tools-Spell Check command, and all it does is slap a double-height tool bar below the others. In fact, it's possible to stack an unlimited number of tool bars at the top of your screen — each of which is fixed in place until you click a button to remove it. Besides cluttering up valuable screen real estate, they make the program look more complicated than it is.

Despite its few weaknesses and the lack of workgroup features, Quattro Pro is a powerful program with lots to offer users of all levels. Performance results were solid, with better-than-average times for file open and recalculation. What garnered it a Best Buy? The Standard Edition of

Quattro Pro lists for less than one third the price of its competitors.

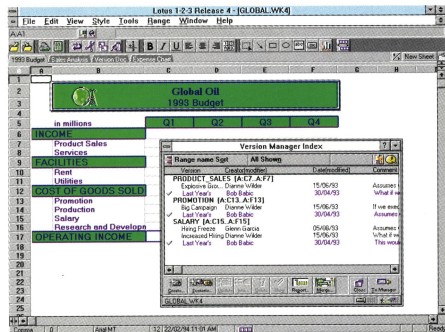
Lotus 1-2-3 release 4.01 for Windows

If you previously dismissed Lotus 1-2-3 for Windows based on the less-than-stellar reviews of release 1.1, it's time to take another look. 1-2-3 for Windows has come a long way. You'll find improvements in virtually every area — most notably its user interface, formatting, charting, and database querying. The new Version Manager is just the ticket for those who need to keep track of different scenarios. In a feature-by-feature comparison, 1-2-3 release 4.01 for Windows may not have gained as many marks as its competitors, but most users will find that this product serves their needs well, especially for typical office applications.

The first thing we noticed was the improved ease of use. Release 4.01's completely revamped user interface makes this product a joy to use. The right mouse button brings up a shortcut menu relevant to the current selection. As in Ami Pro, you

can view and change cell properties using the status bar at the bottom of the screen. The SmartIcon palette changes automatically, based on what you're doing. Although you can see only one palette at a time, it's easy to switch palettes. 1-2-3, of course, features drag-and-drop for copy and move operations (though it doesn't warn you if you're about to overwrite existing information). This version also features in-cell editing — a more intuitive approach than having to jump to an edit line above the document. The program even supplies a close parenthesis in a formula if you forget it.

If you use your spreadsheet to store database tables or as a front end for external databases, you'll be delighted with the improvements in release 4.01. You can forget all the tedious details you ever learned about criterion and output ranges, since database querying is now done with a clever dialogue box. The results of a query are stored in a special range, and when you activate this range, the Query menu appears. This lets you easily modify the query, refresh it, or perform automatic aggregation — to get total sales by



The Version Manager Index displays information about all the versions defined

Version Manager is ideal for workgroup situations in which co-workers enter forecasts or assumptions

region, for instance. The latest revision of 1-2-3 still uses DataLens drivers to connect to external databases and ships with drivers for dBase, Paradox for DOS and Windows, SQL, and DB2/2.

1-2-3 for Windows has a data cross-tab command, but it's no match for Excel's more powerful and flexible PivotTable feature. For example, 1-2-3's cross-tabs are limited to a simple table showing only two fields and a single aggregate field. And if you want to perform Improv-like manipulations of data, you'll need to use Improv.

The new Version Manager is the star of the show. It lets you store and manage different versions of selected worksheet ranges. These different versions can then be combined into named scenarios — for example, Best Case, Worst Case, Most Likely Case. You can even request a report that summarises the effects of your scenarios on key bottom-line cells.

Version Manager is ideal for workgroup situations in which co-workers enter forecasts or assumptions as separate versions of an input range. For example, your finance

department may have three different sets of interest rate forecasts, and your sales department may have two sales forecasts — one based on the current product line and another on an expanded product line.

You can use Lotus Notes or a network to share your file with others. Alternatively, you can send out a copy of your file and then merge versions and scenarios into a master file. If getting input from co-workers and juggling various scenarios sounds familiar, Version Manager alone may be enough reason for you to choose 1-2-3 for Windows.

1-2-3 for Windows offers a few unique formatting features. While Excel lets you display text vertically in a cell, only 1-2-3 for Windows lets you set the precise angle at which you want your text to appear. (Quattro Pro and Improv do not allow you to adjust the text angle at all.) The program also includes a dozen designer frames that can smarten up an otherwise dull range of numbers or frame an embedded chart.

As in Excel, every 1-2-3 worksheet has a draw layer on which you can add arrows, diagrams, free-floating text, and graphics. When you create a chart, it goes directly on the worksheet's draw layer rather than in a separate window. Not having to deal with separate chart windows makes 1-2-3 charting easier than ever. Modifying the chart is straightforward: simply double-click or right-click the chart element and go for it — and you can drag and resize most chart elements directly. 1-2-3 offers all the basic chart types, but it fails to match the other spreadsheets when it comes to variety.

1-2-3 for Windows is a great

upgrade, but all is not perfect in Lotusland. Although it can now read (but not write) Excel 4.0 files, 1-2-3 for Windows is still weak in file import and export options. For example, to load a DBF file as a worksheet, you have to resort to using a stand-alone DOS translation utility. Particularly annoying is the inability to open an additional window to view another section of a worksheet file. If you want to display the same file in three windows so you can see three different areas or pages of the file at once, you're out of luck. This, coupled with the fact that you can split a window into only two panes, means that viewing options are quite limited. Another problem is with group editing mode. Although this mode makes it easy to format multiple sheets in a file quickly, you cannot specify which sheets in a group you want to edit. Consequently, this feature is useable only when you need every sheet in your file formatted identically.

Even with these drawbacks, 1-2-3.4.01 for Windows will satisfy all but the most demanding spreadsheet users, and it's easy to learn and use. Its performance test results were respectable, falling in the middle of the pack. If you don't require the absolute maximum in features, be sure to give this program a look.

Lotus Improv for Windows release 2.1

If you're looking for a good all-purpose spreadsheet, Improv is not the answer. Improv is advertised as a spreadsheet, and it may look and feel like the other products in this comparison, but it is best described as a multidimensional data modelling tool. It's not for everyone, but what it does, it does very well.

Improv's forte is dealing with highly structured multidimensional data. Any of the other spreadsheets can handle a multidepartment budget model easily — budget items are in the first column, months are in the first row, and each department is on ▶

Lotus 1-2-3 release 4.01 for Windows

Pros: Version Manager, database queries, in-place cell and chart editing

Cons: Limited import and export options, one window per file, weak analysis tools

Price: \$735

Lotus Development
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DOS SPREADSHEETS: NOT DEAD YET

As with every other software category, all the real spreadsheet innovations are happening in Windows. But if your system can't run Windows — or if you simply prefer the snappy and responsive feel of text mode — don't despair. Several manufacturers continue to supply DOS-based spreadsheets; the best of them come from Lotus and Borland.

1-2-3 release 2.4 is best described as a basic spreadsheet. It has changed relatively little over the past 7 or 8 years, apart from the Wysiwyg add-in that has given the product a face-lift. This graphical add-in forces you to work with two independent menu systems. When you save your work, the formatting information is stored in a separate file, so if you distribute the worksheet you have to remember to include both files. Also, 1-2-3 release 2.4 lets you work with only one file at a time, and files are of the basic flat-file variety — no 3-D worksheets here. Graphing features are primitive compared with those of Windows-based spreadsheets, and the menu systems are the older moving bar variety, not the more modern pull-down type. There are many third-party 1-2-3 add-ins that bring new functionality, but every add-in reduces precious available memory.

1-2-3 release 3.4 is the better choice if you want a Lotus DOS spreadsheet. This version also ships with the Wysiwyg add-in, which has the same schizophrenic menu problems as in release 2.4. However, release 3.4 lets you work with multiple files, and the files are true 3-D worksheets. It can also use extended memory, so if your system is equipped with extra RAM, you're less likely to encounter out-of-memory problems. Lotus has just released 1-2-3 version 4 for DOS, with numerous Windows-like features, e-mail support and version management (see *PC World* March 1994 for a First Look).

Borland's new Quattro Pro for DOS 5.0 is clearly your best bet in terms of features, ease of use, and sheer value. (At \$195, it's a steal.) Despite the same price and version number, this is not a DOS version of Quattro Pro for Windows — the Windows version has superior useability and features.

Like the Windows version, Quattro Pro for DOS uses a notebook orientation for its 3-D worksheets. Another advantage is that you can access all the fancy formatting features, even if you're running in plain-text mode. If you're in the market for a first-class DOS spreadsheet, we suggest you put Quattro Pro for DOS at the top of your list.

a separate sheet — in three dimensions. But what if you want to add a fourth dimension to track actual expenditures and variance? This is where a standard spreadsheet becomes unwieldy, and Improv

shows its true grit. An Improv model can have as many as 12 dimensions, making it the ideal tool for very sophisticated tracking and modelling. On the other hand, when asked to perform a simple operation

such as adding two cells together, even spreadsheet wizards will probably scratch their heads during their first encounter with this program. Improv takes such a radically different approach that the skills you have acquired with other spreadsheets won't do you much good.

Like a database, Improv stores its data centrally. This means that a specific data point is not physically tied to a particular cell in its display. Consequently, it's a simple matter to change dramatically the way your data is displayed. You can display up to 12 categories (also called data dimensions) as rows, columns, or pages. Dragging a category name instantly changes the way you view your data — changing a row-oriented category to display in columns, for instance. In addition, it's easy to group items together and insert group totals automatically. This lets you collapse or expand the data to see more or less detail. Both Excel and Quattro Pro for Windows attempt to add some of Improv's functionality to a traditional spreadsheet (see "Multidimensional data modelling comes of age" for details).

		This Year	Next Year
Australia	Planes	740	888
	Trains	140	168
	Automobiles	640	768
Japan	Planes	430	516
	Trains	290	348
	Automobiles	150	180
France	Planes	320	384
	Trains	460	552
	Automobiles	210	252
Germany	Planes	425	510
	Trains	430	516
	Automobiles	325	390

This Improv model has three categories. Countries and product are shown as rows, years as columns

FEATURES COMPARISON

Windows spreadsheets: more than just number crunchers

	BEST BUY		BEST BUY	
	Borland Quattro Pro 5.0	Lotus 1-2-3 release 4.01	Lotus Improv release 2.1	Microsoft Excel 5.0
● Yes ○ No				
Standard features				
List price	\$195 ¹	\$735	\$735	\$695
Disk space required (minimum to full installation)	10Mb – 23Mb	7.5Mb – 13Mb	7Mb – 13Mb	8Mb – 23Mb
Daily support hours	11	24	24	12

Ease of use

Drag-and-drop copy and move	●	●	○	●
Select and name noncontiguous ranges	●	○ ²	○	●
In-cell editing	○	●	○	●
Interactive tutors	●	○	○	●
OLE client, and server	●	●	●	●
OLE 2.0	○	○	○	●
Outliner	○	○	●	●

Analysis

Total functions	373	226	161	318
Create custom functions	○	○	○	●
Array formulas	●	○	○	●
Compile formulas	●	○	○	○
Label-based worksheet consolidation	●	○	○	●
Automated scenario management	●	●	○	●
Nonlinear solver	●	●	○	●
Worksheet auditing tools	● ³	●	○	●
Analysis of variance	●	○	○	●

Presentations and charting

Automatic table formatting	○	●	○	●
Rich text-cell formatting	○	● ⁴	○	●
Display text at angle	○	●	○	● ⁵

	BEST BUY		BEST BUY	
	Borland Quattro Pro 5.0	Lotus 1-2-3 release 4.01	Lotus Improv release 2.1	Microsoft Excel 5.0
● Yes ○ No				
Presentations cont'd				
Vertical alignment in cell	○	●	○	●
Word wrap in cell	○	●	○	●
Centre label in range	●	●	○	●
Group editing for multipage worksheets	●	●	○	●
Draw layer for worksheet annotations	○	●	● ⁶	●
Edit charts on worksheet	○	●	● ⁶	●
Automatic trend line in charts	●	○	○	●
On-screen slide show	●	○	○	●

Data access and manipulation

Cross-tab reports	●	○ ⁷	●	●
Multidimensional data pivoting	●	○	○	●
Relational queries	●	○	●	●
Dynamic links to external database	●	●	●	●
Direct Access to SQL databases	●	●	●	●

Customisation

Add dialogue box controls to worksheet	○ ⁸	○ ⁸	○ ⁸	●
Modify menus	●	○	●	●
Dialogue box editor	●	○	●	●
Macro command language	●	●	○	●
BASIC-like macro language	○	○	●	●

¹ \$695 for Workgroup Edition² Select only.³ Limited.⁴ Not intuitive; needs embedded codes⁵ 90 degrees only.⁶ Goes into a presentation window separate from the worksheet.⁷ Two-way only.⁸ Buttons only.⁹ Buttons only, and only in presentation window.

Unlike most spreadsheets, which store formulas in cells, Improv's formulas are global, which means that a single formula can produce results in dozens or hundreds of cells. This eliminates the common spreadsheet routine of building a formula and then copying it to adjacent cells. You enter your global formulas into a

special formula pane, and the formulas are evaluated in order. Improv's formulas refer to category and item names rather than obscure cell references, making them somewhat self-explanatory. Therefore, an Improv formula might read something like Discount = List * DiscountPct.

But using these general formulas

also means that a single data point could be affected by more than one formula. Perhaps the most confusing aspect of Improv is dealing with these overlapping formulas. They're always flagged, but it's up to you to determine which formula has precedence.

Improv shows its difference ▷

approach in other areas besides formulas. Its charting feature is similar to 1-2-3 for Windows, but it handles some aspects quite differently. For example, you can't simply insert a chart into your worksheet; you need to create a special presentation window. It also differs in its approach to macros. Improv has a Basic-like scripting language that can automate some tasks, but casual users are left out of the picture, since the program does not have a macro recorder.

The latest Improv upgrade includes a version of Q+E Extend so you can access several types of database files. The upgrade also supports 1-2-3 release 4.0's WK4 files and Notes/fx, which enables linking between Improv cells and fields in Lotus Notes and lets Improv work well as a companion to 1-2-3.

Lotus provides several template files that will give you a head start setting up your models. Once you learn the basic concepts, you'll find most aspects of this product remarkably easy to use. The user interface is exemplary, incorporating lots of ease-of-use features, right-click shortcut menus, SmartIcons, a live status bar, and a unique settings box that offers one-stop shopping for formatting — you can display this at all times if you like. When you select a formula, the cells that it uses are highlighted, making it easy to check if a formula is actually doing what you want it to.

But dig a little deeper and you'll find that Improv lacks many of the key features you may take for granted in other spreadsheets. For example, there's no search command and no way to annotate a formula or

Besides the now common drag-and-drop feature for copying and moving, there are several other mouse actions that auto-fill a range

cell. Improv also lacks scenario management, a non-linear solver, and even simple goal seeking. Improv doesn't provide a way to password-protect a file — an odd omission, since many users will develop models dealing with sensitive financial information.

Although it won't substitute for a standard spreadsheet, Improv is an impressive product. By its very nature, Improv forces you to structure your spreadsheet model, so for unstructured models you'll be much better off with any of the other products. Excel and Quattro Pro both offer some of Improv's features, but if you need industrial-strength multi-dimensional data manipulation, Improv is certainly your best bet.

Microsoft Excel 5.0

Excel has always set the Windows spreadsheet standard, and the latest version steps that standard up several notches, making it one of two worthy recipients of our spreadsheet Best Buy. Excel 5.0 has many ease of use enhancements, a new macro language, improved scenario management and several new data analysis tools. This upgrade addresses the major problem with version 4.0: the lack of 3-D worksheets. Excel files can now have as many worksheets arranged in a workbook as system memory allows. These sheets can be normal worksheets, macro sheets, chart sheets, or sheets that hold custom dialogue boxes. In addition, version 5.0 is one of the first applications to support the OLE 2.0 specification.

Microsoft made this program's features even more accessible to the new user. In version 4.0, Microsoft introduced the ChartWizard — a

series of dialogue boxes that guide the user through the steps to creating a perfect chart. There's even more wizardry in 5.0: a Text Import Wizard, a PivotTable Wizard and a useful Function Wizard that significantly improves on version 4.0's Paste Function command by helping you with the function's arguments. In addition, Microsoft Query (the stand-alone database query tool that replaces Q+E) includes cue cards to assist you.

One of the more interesting new features is the TipWizard, which monitors your actions as you work. If you do something inefficiently, the TipWizard briefly explains the alternative method with a direct line to a help topic for more details. These tips keep accumulating until you're ready to read them (using the TipWizard tool bar), or you can turn the feature off entirely.

A lot of intelligent design went into the latest version of Excel. For example, querying a worksheet database has never been easier. Issue the *Data-Filter-Autofilter* command, and Excel determines the database for you. The field names turn into drop-down list boxes that display all unique values in each field. Simply select the values you want to see on screen, and Excel hides all records that don't qualify.

The program abounds with such intuitive features. For example, click the Sort icon, and Excel determines your data range based on the cell pointer's position and uses the current column as the sort key. Holding <Shift> while you click the icon performs the sort in descending order.

Excel 5.0 makes particularly good use of the mouse. Besides the now common drag-and-drop feature

Lotus Improv for Windows release 2.1

Pros: Works with up to 12 data dimensions, global formulas, flexible data grouping and viewing

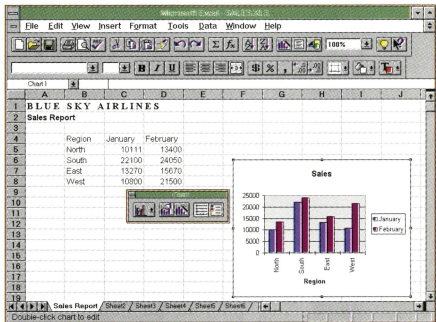
Cons: No password protection, lacks many common spreadsheet features

Price: \$735

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Excel's ChartWizard assists users in creating and manipulating charts

for copying and moving, there are several other mouse actions that auto-fill a range. You can drag a range of data into a chart, and the data appears as a new chart series. You can also use drag and drop to embed an OLE 2.0 object. If your mouse pointer hovers over any icon, a tiny message box pops up explaining that icon's purpose.

The new automatic sub-total feature is sure to be a hit with database users. A single command will insert subtotal formulas into a data range

automatically. For example, if you sort the records in your sales database by region, Excel can automatically generate subtotals to show total sales by region. Excel can even create it in outline form so you can hide the details.

Excel 5.0 still supports the XLM macro language, but it also includes an advanced macro system based on Visual Basic for Applications (VBA). Although it's similar to Visual Basic (VB), it has lots of extensions. Casual users can record their actions while Excel generates VBA code. More advanced users can write code directly in a special Module sheet. You can create custom dialogue boxes, or simply insert dialogue box controls directly on a worksheet. In the latter case, you can link these controls to cells in a worksheet without writing any macro code. For example, you might want to add a small scroll bar that lets the user change the interest rate displayed in a cell. Manipulate the scroll bar, and the cell's value changes accordingly.

The new macro system omits some features, however. For example, VBA objects don't have as many

properties as they do in VB, and you won't find VB's handy Properties window. Nonetheless, it's a powerful language and most will agree it's vastly superior to the former macro system. In addition, this language will eventually appear in all Microsoft applications, making cross-application macros possible.

Although its functions don't have quite the breadth of those in Quattro Pro for Windows, Excel's analysis tools are strong. Consider Excel's charting capabilities.

Like 1-2-3, Excel creates charts directly on a worksheet, but you can also store a chart on a special Chart sheet, which is useful if you want to print the chart separately. Formatting a chart is a breeze, and you use the same techniques and tool-bar icons as you do when formatting a worksheet. The product now also supports custom-named chart formats.

If there are any noticeable drawbacks in charting, it's the same problem Excel has always had: text size doesn't change proportionately when you resize an embedded chart. Changing the size of an embedded chart can entail lots of reformatting.

Excel's user interface is remarkably consistent and intuitive. The menus and tool bars now correspond to those in Word for Windows whenever possible. This means that if you're moving up from Excel 4.0, you may experience some initial confusion over the new menu system. For example, the Formula-Define Name command is now Insert-Name-Define. Microsoft made these changes to improve inter application consistency and also to streamline the commands. Once you become familiar with the new menus, you'll probably find them more logical.

Excel 5.0 is suitable for users at all levels. We performed tests with a preproduction version of the program, and test results were impressive, especially for recalculations. The only disappointing result was the relatively lengthy file-load time. These numbers may change with the shipping version of this program, although not by much.

Spreadsheets just don't get any better than this. ■

Microsoft Excel 5.0

Pros: Analysis tools, data modelling, OLE 2.0 support, Visual Basic for applications

Cons: Text size doesn't adjust when you resize embedded charts, menus are drastically different from those in version 4.0

Price: \$695

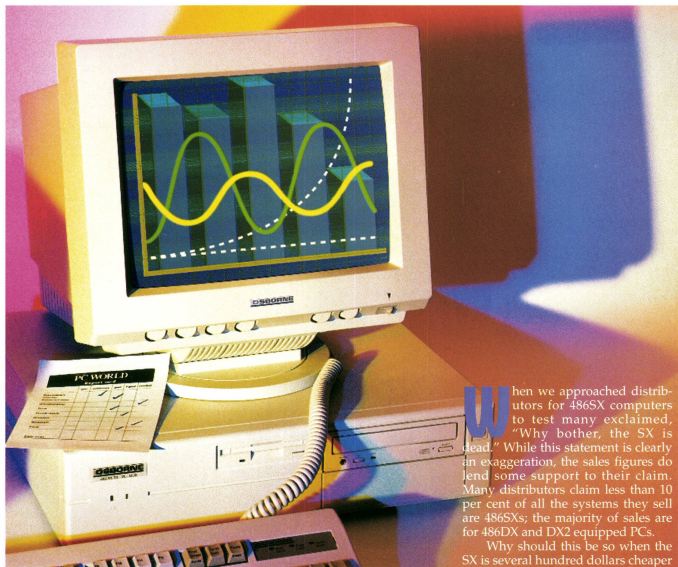
Microsoft
Phone: (02) 870 2100
Fax: (02) 805 1108

18

Affordable PCs

486SX computers tested

**If you are about to purchase a general purpose PC,
why not look at a cheaper 486SX? It has all the
performance you need, and it's upgradable.
The PC World Test Centre examines 18 models
currently available . . .**



When we approached distributors for 486SX computers to test many exclaimed, "Why bother, the SX is dead." While this statement is clearly an exaggeration, the sales figures do lend some support to their claim. Many distributors claim less than 10 per cent of all the systems they sell are 486SXs; the majority of sales are for 486DX and DX2 equipped PCs.

Why should this be so when the SX is several hundred dollars cheaper than DX systems? The answer is that most buyers perceive the 486SX as an "inferior" product.

This is clearly nonsense: the only difference between a 486SX-33 and a 486DX-33 is the integral maths co-processor unit built into the 486DX chip. In addition, for the majority of applications, both processors perform identically at the same clock speed, be it word processing, databases, graphics, or games.

The only applications that run faster on the DX are those that include code to utilise the maths co-processor — and with the exception of some CAD and animation programs, even these will still run on an SX.

By Steven Turvey

PC WORLD

REPORT CARD

33MHz 486SX computer
AcerMate 486SX

CRITERION	SCORE
Performance <i>SYMark93: 80.08; slowest of the 33MHz systems (no secondary cache which can optionally be added up to 1Mb).</i>	Satisfactory
Software compatibility	Excellent
Expandability	Excellent
Documentation	Satisfactory
Setup and ease of use <i>DOS 6.2 and Windows 3.1 pre-installed; easy access to upgradable components; "green" PC and monitor with "Doze" and "Sleep" power saving modes.</i>	Very Good
System design <i>All functions are integrated on the surface-mount motherboard with two patches that drop the score from an excellent; solid plastic and metal case configurable as either mini-tower or desktop; upgradable to a Pentium P24T.</i>	Very Good
Warranty <i>One year full return-to-base followed by further two years parts only.</i>	Not Scored
Value	Satisfactory
Final score	6.7

PRODUCT SUMMARY

Company: Acer Computer Australia Pty Ltd, Tower A Level 3, 112-118 Talavera Road, North Ryde, NSW 2113.
Phone: (02) 870 1999. **Fax:** (02) 878 6227.
List price: \$3,655 for test configuration.
Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse and one parallel port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.
Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) integrated VLB Cirrus Logic video; AcerView 33D 14in colour monitor.
Storage and memory: 210Mb WD Caviar 1210 hard disk with an integrated VLB IDE controller; 3½in 1.4Mb floppy drive; 8Mb of 70ns RAM (SIMMs, 64Mb maximum); no secondary cache fitted (maximum 1Mb).
Pros: Very good system design and ease of use.
Cons: Quite slow; above average price.
Summary: A very well designed and expandable system but it is the slowest in the 33MHz class — and one of the more expensive.

Take Excel for example — it will run happily on both SX and DX CPUs, but when it detects a DX it will make use of the maths co-processor and thereby perform number-crunching faster. But, in day-to-day home or small business use the difference in speed will be negligible.

However, PC developments progress rapidly, and before too long the 25MHz and 33MHz 486 will go the way of the 386, the 286 and the dinosaur — perhaps as soon as the end of this year. When we contacted distributors for PCs for this comparison we specified Intel 486 pin-compatible systems.

This feature to some extent protects a PC from early retirement: if a new piece of software you wish to run needs more get-up and go than your SX can manage, or if it won't run without a maths co-processor, simply unplug the 486SX chip from the socket on the motherboard and replace it with a 486DX2-66 or Intel's new 486DX4-99 for an instant turbo-

charge. Most of the systems tested were fitted with Zero Insertion Force (ZIF) CPU sockets; flipping a lever on the socket locks or releases the CPU for easy insertion and removal.

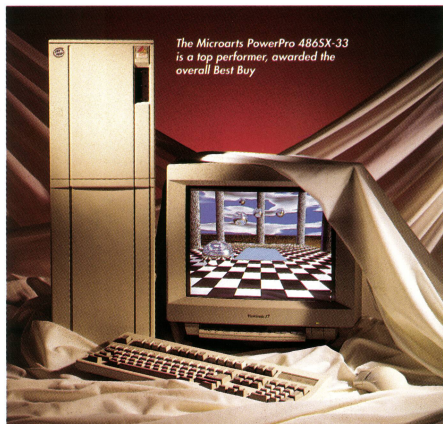
These sockets also cater for the fabled P24T CPU, yet to see the light of day. A P24T upgrade will apparently bestow upon your old 486SX the power and speed of a Pentium.

Enter PCI

PCI motherboards are beginning to make an appearance. Amongst the PCs tested, two had PCI slots. PCI is the new Peripheral Connect Interface — Intel's answer to the VESA local bus configuration.

A PC can only have at most three VESA slots. Many just have one or two, because the more load you put on the VESA bus the less well it performs.

VESA is at present a 32-bit standard, and many say the VESA configuration does not provide adequate buffering between the CPU and the



The Microarts PowerPro 486SX-33 is a top performer, awarded the overall Best Buy

Compaq's Presario 425 has excellent design and workmanship, and is awarded the Best Buy for the SOHO market



add-on cards. VESA is also not terribly reliable at much over 33MHz.

Enter PCI, which can handle up to nine buffered slots with similar performance specs to VESA, and has the ability to cater for 64-bit Pentiums. It's allegedly more stable at high clock speeds as well.

VESA and PCI motherboards are easy to tell apart: VESA slots are positioned in-line as an extension of the standard 16-bit ISA slots; and a VESA card draws power and some signals from the ISA slot while gaining its 32-bit functionality from the VESA slot. A PCI slot looks a lot like a VESA slot but it sits adjacent to the ISA slots as a completely independent entity.

"Green" PCs are relative newcomers to the PC stage. So far the term "green" is focused on power saving, without much emphasis on recyclable parts — one hurdle at a time. The power saving angle is certainly justified — I cringe when I imagine the enormous amounts of electrical energy consumed by a hundred million or so PCs, which in turn helps to add to the world's radioactive waste, acid rain and greenhouse gas pollution problems.

To save energy the "green" PCs and monitors use similar power sav-

ing methods to notebooks.

After a short period of inactivity, user definable, the PC powers-down its hard drive, slows its CPU, and blanks the screen, forcing the monitor to switch to low power standby mode.

The monitor can instantly wake from this state. After a longer period of inactivity the PC and monitor switch into "sleep" mode.

Some low power CPUs can actually stop, while the monitor drops to a very low power state that it cannot "wake" from instantly. A typical PC and monitor in sleep mode con-

sume around 50 watts rather than several hundred watts while operating full throttle.

Performance and price varies

We tested 486SX PCs with our suite of everyday software applications (see "How we tested 486SX PCs")

Microarts PCs have consistently delivered top performance in our comparisons, and the Microarts PCI-based 486SX-33 system in this test is no exception. It clobbers the competition with a SYSmark93 score of 111.58. This isn't surprising when you look at the high performance components fitted to the Microarts. What is surprising is that the system can still be offered at well below average price.

The next three place-getters with very good performance are the Micro Parts, the Deltacom (both are also notable for below average pricing), and Compaq's pricey DeskPro XE.

The three slowest 33MHz systems, the AcerMate, AST Premima, and DECpc, all lack secondary cache which, if fitted, would have quite an impact on overall performance. Cache options for these systems would cost at least several hundred dollars but the performance boost, in the order of 5 to 10 per cent, would

PC WORLD

REPORT CARD

33MHz 486SX computer

All Data Arrow 486SX

CRITERION	SCORE
Performance SYSmark93: 94.39; average for its class.	Good
Software compatibility	Excellent
Expandability	Excellent
Documentation	Very Good
Setup and ease of use DOS 6.2 and Windows 3.1 preinstalled; good access to upgradable components, CPU ZIF socket is half under the power supply.	Good
System design Desktop case is solid and allows easy access to a small motherboard which is upgradable to a Pentium P24T.	Good
Warranty Two years return-to-base and a further three years labour only.	Not Scored
Value	Very Good
Final score	7.4

PRODUCT SUMMARY

Company: All Data Australia Pty Ltd, 27 Rhur Street, Dandenong, VIC 3175.

Phone: (03) 794 5799. **Fax:** (03) 794 0668.

List price: \$2,490 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one parallel and one games port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) Cirrus Logic VLB video card; 14in colour monitor.

Storage and memory: 200Mb WD Caviar 1210 hard disk with a VLB IDE controller; 3½in 1.4Mb floppy drive; 8Mb of 70ns RAM (SIMMs, 32Mb maximum); 256K of 20ns secondary cache fitted (maximum 256K).

Pros: Inexpensive.

Cons: None significant.

Summary: Overall an average performer but at a bargain price.

probably be worth it. Only three 25MHz systems were submitted for testing.

The fastest performer is the neat Compaq Presario, followed by AST's Bravo, while trailing last is the Comperex.

Although we do not score raw Windows video performance the results of our Torque tests are worth noting (see the Video performance charts on page 143). Microarts, again, is clearly the leader with its PCI Diamond Stealth card based on the new Tseng Labs W32P accelerator chip. Second place goes to the Micro Parts, equipped with the now venerable S3 805 chip.

Astonishingly, third place is taken by the 25MHz AST Bravo: its ATI Mach32 accelerator's BitBlit performance is nothing stunning, but AST's Bravo could certainly teach the competition a thing or two about squeezing the most throughput from the local bus between PC RAM and Video RAM — only the Compaq DeskPro came close.

The Deltacom sits in fourth place, but it's a dead certainty that if the video card was local bus rather than ISA, the Deltacom would at

least steal second place from the Micro Parts.

Sitting timidly at the far end of video performance and hopelessly outclassed is the Compaq Presario, built to a price/performance formula. If performance was given a little more weighting and the unaccelerated Cirrus Logic chipset replaced with at least a local bus Cirrus Logic 5426 chip, this would make a world of difference.

In the compatibility tests, all the systems tested ran our test software without so much as a stumble, and all score an *Excellent* in this category.

Expansion and upgrades

Only the compact little Presario has a less than perfect score in expandability; the system has been designed with trade-offs between size and expansion potential. It only has two mass-storage bays, filled by the floppy and hard drive.

Also the system can only be expanded to 20Mb of RAM; however, in the foreseeable future this should be more than adequate for the home or small business user.

The Deltacom and Presario are the only systems not to offer an

upgrade path to the Pentium P24T: both are upgradable to 486DX2-66's.

Most of the systems have RAM expansion capacities to either 32Mb or 64Mb, but the AST Premia, Comperex, Microarts, and Peripherals Plus can all take up to 128Mb of RAM.

Setup and ease of use

The modern PC is quite a simple beast to set up and use, with all the manufacturers in this group pre-installing DOS and Windows. But credit must be given to the Presario's simple to use design. The 14in monitor and PC box are in a single unit, à la Mac. It's simply a matter of plugging in the single power lead, keyboard and mouse leads and turning the system on. Compaq even provides, on both the Presario and DeskPro, an excellent Windows front-end called Tabworks, which emulates a side-tabbed diary in functionality.

To upgrade the Presario you simply remove two screws, and the entire motherboard and mass storage cradle slide out — nothing could be

Continued page 136

REPORT CARD

BEST BUY
SOHO

	AcerMate 486SX	All Data Arrow 486SX	AST Bravo LP 4/25s	AST Premia 4/33s	Compaq DeskPro XE 433s	Compaq Presario 425	Comperex Champion 486SX	DECpc LPv+ 433sx
Price	\$3,655	\$2,490	\$3,704	\$5,151	\$5,266	\$2,898	\$3,510	\$3,120
CPU	486SX-33	486SX-33	486SX-25	486SX-33	486SX-33	486SX-25	486SX-25	486SX-33
Performance								
SYSmark93	Satisfactory	Good	Good	Satisfactory	Very Good	Good	Satisfactory	Satisfactory
Software compatibility	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Expandability	Excellent	Excellent	Excellent	Excellent	Excellent	Very Good	Excellent	Excellent
Documentation	Satisfactory	Very Good	Very Good	Very Good	Excellent	Excellent	Satisfactory	Good
Setup & ease of use	Very Good	Good	Very Good	Very Good	Excellent	Excellent	Good	Very Good
System design	Very Good	Good	Very Good	Excellent	Very Good	Excellent	Good	Excellent
Value	Satisfactory	Very Good	Satisfactory	Satisfactory	Good	Very Good	Satisfactory	Good
Final score	6.7	7.4	7.1	7.1	8.2	8.3	6.4	7.3

EXECUTIVE SUMMARY

Two affordable Best Buys

Easily the Best Buy for power users, with its high-performance peripherals and very reasonable price, is the **Microarts PowerPro 486SX-33** PCI (\$3,070; 486SX-33).

If you are looking for a brand-name PC to purchase for home, student or small office use then the **Compaq Presario 425** (\$2,898; 486SX-25) is almost perfect — workmanship and system design are exemplary, but video performance is a little slow and it's not as expandable as most. This machine gets the Best Buy for the SOHO market.

Two industry giants slugging it out for third place are the **Compaq DeskPro XE 433s** (\$5,266; 486SX-33) and **Osborne's 486SX-33** (\$3,890 with multimedia pack, \$2,895 without; 486SX-33). The Compaq has better performance and workmanship than the Osborne and includes integrated audio. Both systems are easy to use but the Osborne has excellent on-line help and is far less expensive.

The **Micro Parts 486SX-33** (\$2,995; 486SX-33) and **PC Direct PCD 486UPS-SX33** (\$2,643; 486SX-33) are two very reasonably priced systems with above average performance. The PC Direct is the least expensive of the two and all functions are integrated on the motherboard. The Micro Parts, on the other hand, is faster, has top workmanship and features "green" power-saving.

Another fast system, the **Deltacom Mini-Tower 486SX** (\$3,182; 486SX-33) has no local bus slots and is only upgradable to a 486DX2-66. The **Edge VL CDSX33** (\$3,450 with multimedia pack; 486SX-33) is an average performer, but has a cleverly designed multimedia case with integrated stereo speakers. With average performance but at a rock bottom price, the **All Data Arrow 486SX** (\$2,490; 486SX-33) is a great buy for the money conscious PC user.

One of the big names, but at a clone price, the **DECpc LP+ 433sx** (\$3,120; 486SX-33) has excellent workmanship and design, including "green" power-saving features. However, the DECpc has below average performance.

The **IPC Green PC 486SX-33** (\$3,200; 486SX-33) and **Peripherals Plus 486SX-33** PCI (\$3,300; 486SX-33) are closely matched in price and performance. The IPC has power-saving features while the Peripherals Plus has a PCI bus and is expandable to 128Mb of RAM, but it is also the more expensive of the two.

Both **AST's Bravo LP 4/25s** (\$3,704; 486SX-25) and **Premmia 4/33s** (\$5,151; 486SX-33; EISA bus) display great workmanship and innovative system design. The Bravo has low-power features and very fast video, but both it and the Premmia are far more expensive than the competition, and the Premmia is slow to boot. It would appear these systems are aimed far more at the large corporate buyer than the SOHO market.

Inexpensive, "green", very good design, but quite slow: the **Mitac 4168G** (\$2,695; 486SX-33) should not be purchased without some of its optional 1Mb of cache RAM if you're after good performance.

Solid and well designed it may be, but the **AcerMate 486SX** (\$3,655; 486SX-33) is the wooden-spoonster in the 33MHz class. This is another system screaming out for its optional secondary cache. The Acer is also a tad on the pricey side.

The **Syncomp Mini 486SX-33** (\$3,795; 486SX-33) is a solid, well-built system but its overall performance is very lackluster and its price is well above average. Definitely underpowered, even for a 25MHz system, the **Comperex Champion 486SX** (\$3,510; 486SX-25) is the slowest system tested. Its construction and design is average, but it is overpriced and only represents satisfactory value for money.

BEST BUY

Deltacom mini-tower 486SX	Edge VL CDSX33	IPC Green PC 486SX-33	Microarts PowerPro PCI 486SX	Micro Parts 486SX-33	Mitac 4168G	Osborne 486SX-33	PC Direct PCD 486 UPS-SX33	Peripherals Plus 486 SX-33 PCI	Syncomp Mini 486SX-33
486SX-33	486SX-33	486SX-33	486SX-33	486SX-33	486SX-33	486SX-33	486SX-33	486SX-33	486SX-33
\$3,182	\$3,450	\$3,200	\$3,090	\$2,995	\$2,695	\$3,890	\$2,643	\$3,300	\$3,795
Very Good	Good	Good	Excellent	Very Good	Satisfactory	Good	Very Good	Good	Satisfactory
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Poor	Poor	Satisfactory	Satisfactory	Poor	Satisfactory	Satisfactory	Good	Good	Good
Good	Very Good	Very Good	Good	Very Good	Very Good	Excellent	Good	Good	Good
Good	Very Good	Good	Very Good	Very Good	Very Good	Excellent	Very Good	Very Good	Good
Very Good	Very Good	Good	Excellent	Very Good	Good	Very Good	Very Good	Good	Satisfactory
7.5	7.5	7.2	8.9	7.8	7.0	8.2	7.8	7.2	6.5

PC WORLD

REPORT CARD

33MHz 486SX computer
AST Bravo LP 4/25s

CRITERION	SCORE
Performance	Good
SYSmark93: 65.47; Average for the 25MHz class; very fast video performance.	
Software compatibility	Excellent
Expandability	Excellent
Documentation	Very Good
Setup and ease of use	Very Good
DOS 6.2 and Windows 3.1 pre-installed; easy access to upgradable components; "Green" PC with standby and sleep power saving modes; extensive security features.	
System design	Very Good
Small footprint slimline case; all functions integrated on the surface-mount motherboard; overall excellent design marred by three patches on the motherboard; no ZIF socket but upgradable to a Pentium P24T; proprietary LAN card slots on the motherboard.	
Warranty	Not Scored
Three years return-to-base warranty.	
Value	Satisfactory
Final score	7.1

PRODUCT SUMMARY

Company: AST Computer, Ground Floor; 706 Mowbray Road, Lane Cove, NSW 2066.

Phone: (02) 415 5400. **Fax:** (02) 418 8520.

List price: \$3,704 for test configuration.

Features: 25MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse and one parallel port; 60-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) integrated VLB ATI Mach32 video; AST 14in colour monitor.

Storage and memory: 170Mb Quantum hard disk with an integrated LB IDE controller; 3 1/2in 1.44Mb floppy drive; 8Mb of 70ns RAM (72-pin SIMMs, 64Mb maximum); no secondary cache fitted (maximum 256K).

Pros: High-quality system design; very good ease of use; very fast video.

Cons: Expensive.

Summary: A feature laden PC with great system design and workmanship, but overpriced for its class and performance.



From page 134

HOW WE TESTED 486SX PCs

easier. The Osborne also scores an Excellent in ease of use. The system is also pre-loaded with a simple Windows front-end and on-line tutorials and help.

The AST Premia's modular approach to upgrading lifts it above average, while the "green" power-saving features of the AcerMate, AST Bravo, DeskPro, Presario, DECpc, IPC, Micro Parts, and Mitac earn bonus points in ease of use.

Most of the systems included in the comparison display workmanship and system design above what we have come to expect.

The AcerMate, both ASTs, both Compaqs, DECpc, Mitac, Osborne, PC Direct, and Peripherals Plus, all have most, if not all, functions integrated on the motherboard. The DeskPro has integrated Business Audio, while the Peripherals Plus has both an integrated IDE controller and a SCSI controller.

The Edge PC has a multimedia case complete with quite good quality integrated 25 watt stereo speakers, and the Micro Parts shows exceptional care in construction.

Performance

Speed — SYSmark93: This benchmark measures the performance of 10 popular business applications. The elapsed times of these applications are combined to produce a SYSmark93 score.

The score is a rate (work divided by time), so higher numbers indicate better performance.

The SYSmark93 test suite is broken down into application categories:

Word processing: The Word for Windows 2.0 and Ami Pro 3.0 tests use several short documents and one large document. This script uses ASCII file conversions, formatting, spelling checker, mail merge, placing graphics, printing, and print previewing.

In WordPerfect 5.2 for DOS, the script formats and previews for

The AcerMate 486SX is a well-designed and expandable system but is the slowest in the 33MHz class



printing a 10-page document creates a smaller document with multiple columns and a graphic, and finally creates a simple one-page memo.

Spreadsheets: The Excel 4.0 workload has several spreadsheets, including a mathematical worksheet, a break-even analysis, a text form, and several tax forms. Lotus 1-2-3 version 3.1+ creates an amortisation table that includes cost-tracking features, then loads a company-wide budget and builds several charts. The spreadsheet scripts test such features as copying cells, editing formulas and printing.

Database: The Paradox for Windows 1.0 script posts several hundred debit and credit transactions, as well as a variety of queries, data validation, and reports.

Desktop graphics: Corel Draw 3.0 creates a graphic presentation containing various manually generated and imported graphics.

Desktop presentation: Freelance

2.0 and PowerPoint 3.0 are used to create presentations containing charts generated manually, as well as from WK1, Excel, and ASCII files. After formatting, the suite prepares slides for output to such devices as plotters.

Desktop publishing: The Page-Maker 5.0 test produces documents — a two-page newsletter with text, a table, and graphics, as well as a ledger-size poster. The script uses such features as formatting, spelling checker, hyphenation, tracking, and printing.

We also test, but do not score, Windows video performance running Torque at a resolution of 640 by 480 in 8-bit mode to obtain raw performance data.

Torque was written by Steve Gibson of Gibson Research Corporation in the US after he became concerned that some manufacturers were "cheating" with many of the mainstream video test applications such as Wintach and Winbench — some software drivers had been allegedly rewritten to produce false

PC WORLD

REPORT CARD

33MHz 486SX computer

AST Premia 4/33s

CRITERION	SCORE
Performance SYSmark93: 82.93; second slowest in its class but the addition of optional secondary cache would certainly improve its performance.	Satisfactory
Software compatibility	Excellent
Expandability	Excellent
Documentation	Very Good
Setup and ease of use DOS 6.2 and Windows 3.1 pre-installed; easy access to upgradable components including a ZIF socket; proprietary motherboard socket for LAN adaptors; extensive security features.	Very Good
System design Desktop case is solid and allows easy access to all components on the integrated EISA motherboard; most upgrades are achieved through proprietary modules; upgradable to a Pentium P24T.	Excellent
Warranty Three years return-to-base warranty.	Not Scored
Value	Satisfactory
Final score	7.1

PRODUCT SUMMARY

Company: AST Computer, Ground Floor, 706 Mowbray Road, Lane Cove, NSW 2066.

Phone: (02) 415 5400. **Fax:** (02) 418 8520.

List price: \$5,151 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse and one parallel port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) integrated VLB ATI Mach32 video; AST 14in colour monitor.

Storage and memory: 340Mb WD Caviar 2340 hard disk with an integrated LB IDE controller; 3½in 1.44Mb floppy drive; 8Mb of 70ns RAM (72-pin SIMMs, 128Mb maximum); no secondary cache fitted (maximum 512K).

Pros: Excellent workmanship and expandability; very easy to upgrade and use.

Cons: Slow and expensive.

Summary: The Premia is rich with features and upgrade options; workmanship and design are first rate, but without the optional secondary CPU cache the system is slow, and expensive.

PC WORLD

REPORT CARD

33MHz 486SX computer

Compaq DeskPro XE 433s

CRITERION	SCORE
Performance SYSmark93: 101.65; above average performance, fourth fastest.	Very Good
Software compatibility	Excellent
Expandability	Excellent
Documentation	Excellent
Setup and ease of use DOS 6.2, Windows 3.1 and Tabworks pre-installed; upgrades are simple; integrated audio system.	Excellent
System design Slimline case; fully integrated motherboard's excellent design and construction is marred by two path wires; ZIF socket allows upgrades to Pentium 247.	Very Good
Warranty One year on-site with a further two years return-to-base.	Not Scored
Value	Good
Final score	8.2

PRODUCT SUMMARY

Company: Compaq Computer Australia Pty Ltd, 18-20 Orion Road, Lane Cove, NSW 2066.

Phone: (02) 911 9999. **Fax:** (02) 911 1900.

List price: \$5,266 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse and one parallel port; 144-watt power supply; bundled DOS 6.2, Windows 3.1, Tabworks, and mouse.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) integrated VLB Qvision video; Compaq 1024 14in colour monitor.

Storage and memory: 270Mb Quantum hard disk with an integrated LB IDE controller; 3 1/2in 1.4Mb floppy drive; 8Mb of 70ns RAM (4Mb DIP and the expansion with 72-pin SIMMs, 32Mb maximum); 64K of 20ns secondary cache fitted (maximum 256K).

Pros: Fast; great design and workmanship; integrated audio.

Cons: Expensive.

Summary: The DeskPro's speed, quality and features are offset by its high price-tag

PC WORLD

REPORT CARD

33MHz 486SX computer

Compaq Presario 425

CRITERION	SCORE
Performance SYSmark93: 69.83; fastest in its class.	Good
Software compatibility	Excellent
Expandability No free mass storage bays after configuration; only expandable to 20Mb RAM.	Very Good
Documentation	Excellent
Setup and ease of use DOS 6.2, Windows 3.1, Tabworks, PFS Window Works and Symantec games pre-installed; single piece monitor and PC construction is a breeze to set up and use.	Excellent
System design PC and monitor combined in a single case; small tray-mounted motherboard and components are spotless; upgradable to a 486DX2-66.	Excellent
Warranty One year on-site with a further two years return-to-base.	Not Scored
Value	Very Good
Final score	8.3

PRODUCT SUMMARY

Company: Compaq Computer Australia Pty Ltd, 18-20 Orion Road, Lane Cove, NSW 2066.

Phone: (02) 911 9999. **Fax:** (02) 911 1900.

List price: \$2,898 for test configuration.

Features: 25MHz Intel 486SX CPU, ISA bus; one serial, one PS/2 mouse, one parallel and one games port; bundled DOS 6.2, Windows 3.1, Tabworks, PFS Window Works, Symantec games and mouse.

Peripherals: Enhanced keyboard; 512K integrated Cirrus Logic video; integrated 14in colour monitor.

Storage and memory: 200Mb Seagate ST3243A hard disk with an integrated IDE controller; 3 1/2in 1.4Mb floppy drive; 8Mb of 70ns RAM; no secondary cache option.

Pros: Compact excellent design; simple to install and use.

Cons: Slow video performance.

Summary: Even though the Presario's price is almost as high as the average 33MHz system its design and ease of use outweighs the cost; for home or small office use the Presario is very good value for money.

high readings. Torque is a simple Windows graphics "raw" performance test; first it sends 1,000 specific rectangles from the system RAM over the bus, be it local bus, EISA or ISA, to the graphic card's RAM. This measures how fast "new" data is transferred to the card.

Torque then tests the BitBlit capability of the card's graphic processor by moving 2000 rectangular chunks of the screen to new locations.

This is performed entirely in the card's on-board RAM. Torque is not a Windows benchmarking program but it does give an idea of the card's potential to display fast, smooth animations and to perform smooth scrolls.

Software compatibility

Our software test suite includes many of the most popular and complicated business programs, so that we can test different aspects of compatibility.

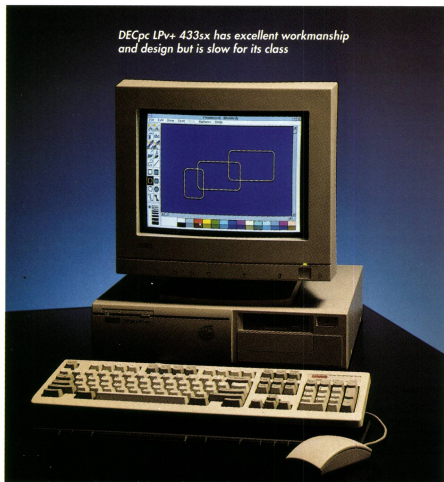
To test software compatibility for 486SX PCs, we ran the following programs: Lotus 1-2-3, release 3.1; dBase IV 1.1; WordPerfect 5.0; Paradox for Windows 1.0; Windows 3.1; Word for Windows 2c; Excel 4; Corel Draw 3; Corel Paint; Freelance 2.0; PowerPoint 3.0; and PageMaker 5.0.

Systems that run all components of our software test suite straight out of the box earn an Excellent score for software compatibility. We drop the score one grade for each program that won't run on the system. Systems that require adjustments to run an application lose a half point for each program that needs work.

Expandability

An excellent score requires the capability to have 16Mb of 32-bit RAM installed on the motherboard; support for up to 32Mb or 32-bit RAM in the system; at least two slots available after hard disk, floppy and hard disk controllers, video adaptor, serial and parallel ports, and 8Mb of RAM are installed; one half-height mounting position after one floppy drive and one hard drive are installed; an AT-style enhanced keyboard; and some manner of disabling keyboard

DECpc LPv+ 433sx has excellent workmanship and design but is slow for its class



input (either mechanical or via password).

We require two free slots to accommodate such add-ons as a network card, a sound card, video capture/genlock card, Flat-Bed Scanner interface cards and so on.

The vendor must also offer a 500Mb or larger hard drive as an option. For each item missing, we drop the product's score a half grade. The final grade is rounded down.

Documentation

At a minimum, documentation should tell you how to set up and use the system, and include accurate diagrams to illustrate text. We also look for an index or detailed table of contents, troubleshooting help, and customising information (on topics such as installing expansion boards or maths co-processors).

We award bonus points for any of the following: quick-start guide, informative on-line tutorial, glossary, on-line help for the system and MS-DOS, quick-reference card, written tutorial, or technical reference guide.

We lower the score if the manual is poorly organised, lacks both a table of contents and an index, does not include information on installing options, or if there are factual errors in the text.

Setup and ease of use

Here we evaluate the ease with which a system can be configured, reconfigured, and used. We examine how easy it is to fit add-in cards into the slots, paying attention to the card guides, bus connectors, and the position of changeable parts such as the

PC WORLD

REPORT CARD

33MHz 486SX computer

Comperex Champion 486SX

CRITERION	SCORE
Performance SYSmark92: 62.32; the slowest system tested.	Satisfactory
Software compatibility	Excellent
Expandability	Excellent
Documentation	Satisfactory
Setup and ease of use DOS 6.2 and Windows 3.1 pre-installed; no problems upgrading although there are almost 30 jumpers to set on the motherboard.	Good
System design Desktop case is solid and allows easy access to the motherboard and other components; upgradable to a Pentium P24T.	Good
Warranty One year return-to-base.	Not Scored
Value	Satisfactory
Final score	6.4

PRODUCT SUMMARY

Company: Comperex Australia Pty Ltd, Unit 6, 112-118 Talavera Road, North Ryde, NSW 2113.

Phone: (02) 878 5888. **Fax:** (02) 878 6042.

List price: \$3,510 for test configuration.

Features: 25MHz Intel 486SX CPU, ISA bus; two serial and one parallel port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) VLB Cirrus Logic video card; Teco 14in colour monitor.

Storage and memory: 210Mb Seagate ST2383A hard disk with an IDE controller; 3½in 1.4Mb floppy drive; 8Mb of 80ns RAM (SIMMS, 128Mb maximum); no secondary cache fitted (maximum 256K).

Pros: Great expandability.

Cons: Slow; expensive.

Summary: The 25MHz Comperex costs more than many of the faster 33MHz systems and was the slowest in the 25MHz class.

Continued page 141

PC WORLD

REPORT CARD

33MHz 486SX computer
Deltacom 486SX

CRITERION	SCORE
Performance SYSmark93: 101.85; third place.	Very Good
Software compatibility	Excellent
Expandability	Excellent
Documentation No system overview: only separate component manuals.	Poor
Setup and ease of use DOS 6.2 and Windows for Workgroups 3.11 pre-installed; upgrades are easy although the CPU socket is not ZIF.	Good
System design Mid tower case; clean motherboard; no VESA local bus slots; no P24T socket, only upgradable to 486DX2-66.	Good
Warranty One year on-site with a further two years return-to-base.	Not Scored
Value	Very Good
Final score	7.5

PRODUCT SUMMARY

Company: Alpha Computers Pty Ltd, Unit 1, 620-632 Botany Road, Alexandria, NSW 2015.

Phone: (02) 317 3344. **Fax:** (02) 317 3859.

List price: \$3,182 for test configuration.

Features: 33MHz Intel 486SX CPU; ISA bus; two serial, one parallel and one games port; 200-watt power supply; bundled DOS 6.2, Windows for Workgroups 3.11, and mouse.

Peripherals: Enhanced keyboard; 2Mb Tseng Labs video card; Deltacom 14in colour monitor.

Storage and memory: 340Mb WD Caviar 2340 hard disk with a Tekram DC-600CF VLB cached (2Mb fitted, 16Mb maximum) IDE controller; 3½in 1.4Mb floppy drive; 8Mb of 70ns RAM (SIMMs, 32Mb maximum); 256K of 20ns secondary cache fitted (maximum 256K).

Pros: Fast.

Cons: Poor documentation; no local bus slots; no P24T upgrade.

Summary: A fast, low-cost system; very good value for money.

PC WORLD

REPORT CARD

33MHz 486SX computer
DECpc LPv+433sx

CRITERION	SCORE
Performance SYSmark93: 88.07; below average for its class, third slowest.	Satisfactory
Software compatibility	Excellent
Expandability	Excellent
Documentation	Good
Setup and ease of use DOS 6.2 and Windows 3.1 pre-installed; easy access to all components; the CPU socket is not ZIF; "green" low-power PC with standby and sleep modes.	Very Good
System design Slimline case; surface-mount motherboard with all functions integrated; design and workmanship is first class.	Excellent
Warranty Three years on-site.	Not Scored
Value	Good
Final score	7.3

PRODUCT SUMMARY

Company: Digital Equipment Corporation (Australia) Pty Ltd, 410 Concord Road, Rhodes, NSW 2138.

Phone: (02) 561 5252. **Fax:** (02) 561 5888.

List price: \$3,120 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse and one parallel port; 145-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.

Peripherals: Enhanced keyboard; 1Mb Integrated VLB S3 video; DEC 14in colour monitor.

Storage and memory: 170Mb Maxtor 7171AT hard disk with an integrated IDE controller; 3½in 1.4Mb floppy drive; 8Mb of 70ns RAM (SIMMs, 64Mb maximum); no secondary cache fitted (maximum 256K).

Pros: Excellent workmanship; simple to use.

Cons: Slow.

Summary: For one of the big names a quite inexpensive system; excellent design and workmanship but slow for its class.

PC WORLD

REPORT CARD

33MHz 486SX computer
Edge VL CDSX33

CRITERION	SCORE
Performance SYSmark93: 96.58; average performance for its class.	Good
Software compatibility	Excellent
Expandability	Excellent
Documentation No system overview manual.	Poor
Setup and ease of use DOS 6.2 and Windows for Workgroups 3.11 pre-installed; easy access to upgradable components; the case is designed for multimedia with built-in 25-watt speakers; the test system also had an 8-bit sound card and CD-ROM drive configured.	Very Good
System design Desktop case is solid and allows easy access to components; the CPU has a heat-sink and cooling fan and the power supply has a thermo-fan; very tidy wire routing; upgradable to a Pentium P24T.	Very Good
Warranty Two years return-to-base.	Not Scored
Value	Very Good
Final score	7.5

PRODUCT SUMMARY

Company: Edge Computer Pty Ltd, 100 Cromwell Street, Collingwood, Vic 3066.

Phone: (03) 416 0099. **Fax:** (03) 417 3518.

List price: \$3,450 for test configuration; \$2,980 without CD-ROM and sound card.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one parallel and one games port; 200-watt power supply; bundled DOS 6.2, Windows for Workgroups 3.11, MS Bookshelf CD, and mouse.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) Parakeet VLB video card; KTX 15in "green" colour monitor; Sound Galaxy NX Pro sound card.

Storage and memory: 256Mb IBM H3256 hard disk with a Promise Technology cached (2Mb fitted, 16Mb maximum) VLB IDE controller; Mitsumi double-spin CD-ROM drive; 3½in 1.4Mb floppy drive; 8Mb of 70ns RAM (SIMMs, 64Mb maximum); 256K of 20ns secondary cache fitted (maximum 256K).

Pros: Very good design and workmanship.

Cons: Poor documentation.

Summary: Very good workmanship and ease of use, average performance with integrated multimedia at a below average price.

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sockets for CPU upgrades and memory. Units that are easy to configure and operate receive good scores. Items that boost the score in setup include useful front-panel displays, a minimum number of jumpers or DIP switches, on-line user's guides for the system or DOS, and keyboard extras such as macro keys.

Items that hinder the setup score include poor slot layout, badly positioned or numerous jumpers and DIP switches, unprotected or missing reset and power buttons, and — except in Micro Channel Architecture or Extended Industry Standard Arch-

itecture systems — setup utilities on disk rather than in the ROM BIOS.

Bonuses are gained for any power-saving features included with the PC; these can save the user substantial amounts of money with lower running costs.

System design

We carefully examine systems to see how well they are designed and constructed. We also run our applications suite on each system for 48 hours, which weeds out the weaklings, and we subject the systems to repeated start-up and shutdown in

Continued page 143

PC WORLD

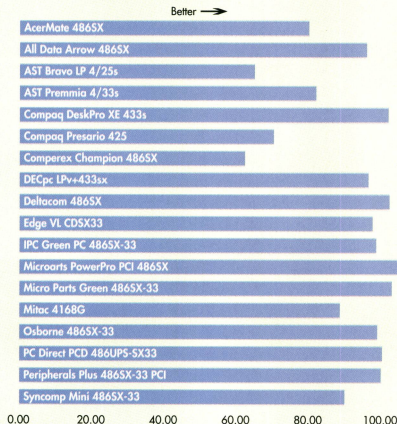
REPORT CARD

33MHz 486SX computer

IPC Green PC 486SX-33

CRITERION	SCORE
Performance SYSmark93: 98.48; slightly above average.	Good
Software compatibility	Excellent
Expandability	Excellent
Documentation	Satisfactory
Setup and ease of use DOS 6.2 and Windows 3.1 pre-installed; "green" PC and monitor with power-saving standby and sleep modes.	Very Good
System design Desktop case is solid; overall attention to detail is good; ZIF upgradable to a Pentium P24T.	Good
Warranty Three years on-site.	Not Scored
Value	Good
Final score	7.2

SYSmark 93 performance test



SYSmark93 uses 10 popular business applications to test performance. Higher numbers indicate better performance

PRODUCT SUMMARY

Company: IPC Corporation Australia Pty Ltd, 620 Church Street, Richmond, Vic 3121.

Phone: (03) 428 8766. **Fax:** (03) 428 9642.

List price: \$3,200 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial and one parallel port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse; "green" power-saving PC.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) Cirrus Logic VLB video card; IPC 14in "green" colour monitor.

Storage and memory: 200Mb Conner CPS210A hard disk with a VLB IDE controller; 3 1/2in 1.4Mb floppy drive; 8Mb of 70ns RAM (SIMMs, 32Mb maximum); 256K of 20ns secondary cache fitted (maximum 256K).

Pros: Low-power "green" PC.

Cons: None significant.

Summary: Average performance at an average price with the added bonus of low-power "green" design.

PC WORLD

REPORT CARD

33MHz 486SX computer
**Microarts PowerPro
 PCI 486SX**

CRITERION	SCORE
Performance	Excellent
<i>SYMark93: 111.58; easily the fastest in its class.</i>	
Software compatibility	Excellent
Expandability	Excellent
Documentation	Satisfactory
Setup and ease of use	Good
<i>DOS 6.2 and Windows for Workgroups 3.11 pre-installed; all components are user upgradeable.</i>	
System design	Very Good
<i>Desktop case and component layout show attention to detail; three PCI slot motherboard; ZIF upgradeable to a Pentium P24T.</i>	
Warranty	Not Scored
<i>Two years return-to-base with a further three years labour only.</i>	
Value	Excellent
Final score	8.9

PRODUCT SUMMARY

Company: Microarts Australia Group, 284-290 City Road, South Melbourne, Vic 3205.
Phone: (03) 696 5955. **Fax:** (03) 696 1942.
List price: \$3,090 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA and PCI bus; two serial, one parallel and one games port; 230-watt power supply; bundled DOS 6.2, Windows for Workgroups 3.11, and mouse.

Peripherals: Enhanced keyboard; 2Mb Diamond Stealth II PCI video card; Viewsonic 14in colour monitor.

Storage and memory: 240Mb Quantum SCSI hard disk with a Nexstor NXT-93 PCI SCSI-II controller; 3 1/2in 1.4Mb floppy drive; 8Mb of 70ns RAM (72-pin SIMMs, 128Mb maximum); 256K of 20ns secondary cache fitted (maximum 256K).

Pros: Fastest 486SX tested; low price.

Cons: None significant.

Summary: A very fast, expandable, well built system at a bargain price; excellent value for money.

PC WORLD

REPORT CARD

33MHz 486SX computer
**Micro Parts Green
 486SX-33**

CRITERION	SCORE
Performance	Very Good
<i>SYMark93: 103.87; second fastest system tested.</i>	
Software compatibility	Excellent
Expandability	Excellent
Documentation	Poor
<i>No system overview manual.</i>	
Setup and ease of use	Very Good
<i>DOS 6.2 and Windows 3.1 pre-installed; simple to upgrade; "green" power-saving PC with standby and sleep modes.</i>	
System design	Very Good
<i>Desktop case; system construction shows care and above average attention to detail; ZIF upgradeable to the Pentium P24T.</i>	
Warranty	Not Scored
<i>Three years on-site.</i>	
Value	Very Good
Final score	7.8

PRODUCT SUMMARY

Company: Micro Parts Pty Ltd, 1392 Dandenong Road, Oakleigh, Vic 3166.

Phone: (03) 563 2299. **Fax:** (03) 563 1093.

List price: \$2,995 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one parallel and one games port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse; "green" power-saving PC.

Peripherals: Enhanced keyboard; 1Mb (1Mb maximum) STB PowerGraph VLB video card; Mitsubishi 14in colour monitor.

Storage and memory: 210Mb WD Caviar 1210 hard disk with an IDE controller; 3 1/2in 1.4Mb floppy drive; 8Mb of 70ns RAM (30-pin and 72-pin SIMMs, 64Mb maximum); 256K of 20ns secondary cache fitted (maximum 256K).

Pros: Fast; solid workmanship; "green" design.

Cons: Poor documentation.

Summary: Fast, well manufactured, "green" PC with a low price tag, very good value for money.

PC WORLD

REPORT CARD

33MHz 486SX computer
Mitac 4168G

CRITERION	SCORE
Performance	Satisfactory
<i>SYMark93: 88.61; third slowest.</i>	
Software compatibility	Excellent
Expandability	Excellent
Documentation	Satisfactory
Setup and ease of use	Very Good
<i>DOS 6.2 and Windows 3.1 pre-installed; easy access to upgradable components; "green" power-saving PC and monitor.</i>	
System design	Very Good
<i>Desktop case can be configured as a mini-tower; surface-mount motherboard with integrated functions misses out on an excellent because of two patches; ZIF socket upgrade to Pentium P24T.</i>	
Warranty	Not Scored
<i>One year return-to-base warranty</i>	
Value	Good
Final score	7.0

PRODUCT SUMMARY

Company: Mitac Australia Pty Ltd, 353 Warrigal Road, Cheltenham, Vic 3192.

Phone: (03) 585 1055. **Fax:** (03) 585 1595.

List price: \$2,695 for test configuration.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse, and one parallel port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) integrated Cirrus Logic VLB video; Mitac M1450PD colour monitor.

Storage and memory: 210Mb WD Caviar 1210 hard disk with an integrated VLB IDE controller; 3 1/2in 1.4Mb floppy drive; 8Mb of 70ns RAM (SIMMs, 64Mb maximum); 256K of 20ns secondary cache fitted (maximum 1Mb).

Pros: Inexpensive; very good "green" design.

Cons: Slow.

Summary: Cleverly designed "green" PC at a low price but performance is below average.

From page 141

the course of our testing. We remove each system's motherboard and examine both sides carefully.

We pay close attention to how well the printed circuit boards are soldered — a substandard job can severely shorten the trouble-free life of any computer system.

We also look for excessive last-minute changes — a sign of planning problems. The system must be rugged enough to withstand the punishment of shipment and everyday use.

We also look at the accessibility of all components. We give lower scores to systems in which adaptors, controllers, and hard drives cannot

be easily removed and replaced. We award a satisfactory score to systems that follow standard design and manufacturing practices.

We raise the system design score for machines that use significant amounts of LSI surface-mount components or PAL chips, particularly clean printed circuit board layout, and static protection on all ports.

Other pluses include integrated I/O, speakers and amplifiers, disk controllers, video on the motherboard, local bus slots (accepted standards only), and upgradable CPU options. We lower the product's system design score when we see too many engineering changes, oversights in mechanical design, and errors in manufacturing. ■

PC WORLD

REPORT CARD

33MHz 486SX computer

Osborne 486SX-33

CRITERION	SCORE
Performance	Good
SYSmark93: 98.78; slightly above average.	
Software compatibility	Excellent
Expandability	Excellent
Documentation	Satisfactory
No system overview but the on-line documentation helps compensate.	

Setup and ease of use **Excellent**
DOS 6.2, Windows 3.1, Osborne Windows front-end and Windows-based on-line user help pre-installed; easy upgrade.

System design **Excellent**
Slim-line case; surface-mount motherboard with all functions integrated; flash-ROM BIOS; ZIF upgradable to a Pentium P24T.

Warranty **Not Scored**
One year on-site.

Value **Very Good**

Final score **8.2**

PRODUCT SUMMARY

Company: Osborne Computer Corporation Pty Ltd, 6/10 Talavera Rd, Nth Ryde, NSW 2065.

Phone: (02) 844 8448. **Fax:** (02) 844 8558.

List price: \$3,890 for test configuration; \$2,895 without CD-ROM kit which includes a 16-bit sound card, Lotus 1-2-3, Ami Pro, Return to Zork, and MS Bookshelf.

Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse, one parallel and one games port; 67-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse, test system was equipped with a CD-ROM kit.

Peripherals: Enhanced keyboard; 1Mb (2Mb maximum) integrated ATI Mach32 VLB video; 14in colour monitor.

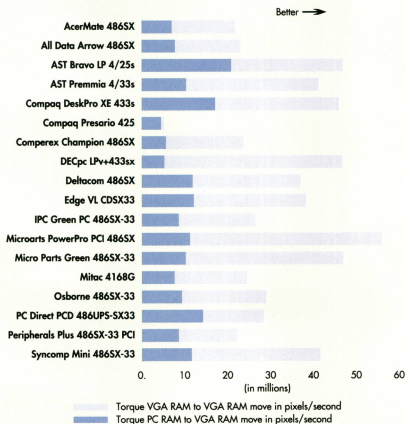
Storage and memory: 240Mb Quantum hard disk with an integrated VLB IDE controller; 3½in 1.44Mb floppy drive; 8Mb of 70ns RAM (72-pin SIMMs, 64Mb maximum); 128K of 20ns secondary cache fitted.

Pros: Excellent ease of use and workmanship.

Cons: No system overview manual.

Summary: An average performer with excellent workmanship and on-line user tutorials; very good value for money.

Torque video test results



FEATURES EVALUATION

	AcerMate 486SX	All Data Arrow 486SX	AST Bravo LP 4/25s	AST Premia 4/33s	Compaq DeskPro XE 433s	Compaq Presario 425	Comperex Champion 486SX	DECpc LPv+ 433sx
Expandability score	Excellent	Excellent	Excellent	Excellent	Excellent	Very Good	Excellent	Excellent
System bus (1)	ISA	ISA	ISA	EISA	ISA	ISA	ISA	ISA
Standard 32-bit system RAM	4Mb	4Mb	4Mb	8Mb	4Mb	4Mb	4Mb	4Mb
Maximum 32-bit system RAM	64Mb	32Mb	64Mb	128Mb	32Mb	20Mb	128Mb	64Mb
Secondary cache RAM fitted/maximum (2)	0/1Mb	256K/256K	0/256K	0/512K	64K/256K	0/0	0/256K	0/256K
Video accelerator	Integrated LB Cirrus Logic GD5428	VLB Cirrus Logic GD5426	Integrated LB ATI Mach32 6880006	Integrated LB ATI Mach32 6880006	Integrated LB Qvision	Non-accelerated, no local bus, uses Cirrus Logic GD5420	VLB Cirrus Logic GD5426	Integrated LB S3 805
Number of VESA local bus slots	0 ⁽⁵⁾	2	0 ⁽⁵⁾	0 ⁽⁵⁾	0 ⁽⁵⁾	0	2	0 (5)
Number of 16-bit slots	4	7	2	5 (32-bit EISA)	3	2	6 (and 2 8-bit)	3
Number of free slots after configuration (4)	4	5	2	5	3	2	6	3
Number of drive bays (3)	2A & 2B	2A & 3B	2A & 1B	2A & 3B	2A & 1B	2A	2A & 3B	3A & 1B
Number of free drive bays after configuration (4)	2	3	1	3	1	0	3	2
Keyboard lock/disable	Password	Keylock/ Password	Password	Password and Security time-out	Password	Password	Keylock/ Password	Password
CPU upgradability	P24T	P24T	P24T	P24T	P24T	486DX2-66	P24T	486DX2-66
Largest hard drive available	520Mb	540Mb	520Mb	520Mb	2Gb	500Mb	2Gb	2Gb

(1) ISA is Industry Standard Architecture

(2) All 486 CPUs to date are fitted with an internal 8K primary cache; secondary cache is high-speed SRAM cache on the motherboard

(3) A = 3 1/2in drive bays; B = 5 1/4in drive bays

(4) Standard configuration includes a video adaptor, drive controller(s), serial and parallel ports, 8Mb of RAM, one hard drive (5 1/4 or 3 1/2in), and one half-height floppy drive

(5) Integrated motherboard functions use local bus

(6) PCI slots are independent of ISA slots whereas VESA slots are dependent on ISA slots for full functionality

PCI is Intel's Peripheral Connect Interface

LB is local bus

VLB is VESA local bus

Deltacom mini-tower 486SX	Edge VL CDSX33	IPC Green PC 486SX-33	Microarts PowerPro PCI 486SX	Micro Parts 486SX-33	Mitac 4168G	Osborne 486SX-33	PC Direct PCD 486 UPS-SX33	Peripherals Plus 486 SX-33 PCI	Syncomp Mini 486SX-33
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
ISA	ISA	ISA	ISA	ISA	ISA	ISA	ISA	ISA	ISA
4Mb	4Mb	4Mb	4Mb	4Mb	4Mb	4Mb	4Mb	4Mb	4Mb
32Mb	64Mb	32Mb	128Mb	64Mb	64Mb	64Mb	64Mb	128Mb	64Mb
256K/256K	256K/256K	256K/256K	256K/256K	256K/256K	0/1Mb	128K/256K	256K/512K	256K/512K	256K/256K
Tseng Labs W321 No LB	VLB WDC90C33-ZZ	VLB Cirrus Logic GD5426	PCI Diamond Stealth W32P	VLB STB S3 805	Integrated LB Cirrus Logic GD5428	Integrated LB ATI Mach32 6880006	Integrated LB WD90C33	Avance Logic PCI ALG2201.0f	Prisma VLB ATI Mach 32 6880006
0	3	2	3 PCI	3	0 (5)	1	0 (5)	3 PCI	2
6	6 (& 1 8-bit)	7	5	7 (& 1 8-bit)	4	3	3	4	8
3	4	6	4 (6)	6	4	3	3	5 (6)	6
1A & 4B	1A & 2B	2A & 3B	2A & 2B	2A & 3B	2A & 2B	2A & 2B	2A & 2B	3A & 2B	3A & 3B
3	1	3	2	3	2	2	2	3	4
Keylock/ Password	Password	Password	Keylock/ Password	Keylock/ Password	Password	Password	Keylock/ Password	Keylock/ Password	Keylock/ Password
486DX2-66	P24T	P24T	P24T	P24T	P24T	P24T	P24T	P24T	P24T
2Gb	2.2Gb	540Mb	2Gb	1Gb	540Mb	540Mb	1Gb	2Gb	1Gb

PC WORLD

REPORT CARD

33MHz 486SX computer
**PC Direct PCD
486UPS-SX33**

CRITERION	SCORE
Performance	Very Good SYSmark93: 101.42; above average performance.
Software compatibility	Excellent
Expandability	Excellent
Documentation	Good
Setup and ease of use	Good DOS 6.2, Windows 3.1 and a simple menu pre-installed; over thirty configuration jumpers on the motherboard and the CPU socket is not ZIF, otherwise upgrade is quite easy.
System design	Very Good Slimline case; predominantly surface-mount motherboard with all functions integrated; clean, no patches; upgradable to a Pentium P24T.
Warranty	Not Scored Five years on-site.
Value	Very Good
Final score	7.8

PRODUCT SUMMARY

Company: PC Direct Computers Pty Ltd, 207 Young Street, Waterloo, NSW 2017.
Phone: (02) 698 8855. **Fax:** (02) 698 1001.
List price: \$2,643 for test configuration.
Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one PS/2 mouse, one parallel, and one games port; 200-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.
Peripherals: Enhanced keyboard; 1Mb integrated Western Digital VLB video; 14in colour monitor.
Storage and memory: 170Mb Quantum hard disk with a integrated VLB IDE controller; 3½in 1.4Mb floppy drive; 8Mb of 70ns RAM (30-pin and 72-pin SIMMs, 64Mb maximum); 256K of 20ns secondary cache fitted (maximum 512K).
Pros: Very good performance and design; low price.
Cons: None significant.
Summary: Above average in most categories except price, this is a quality PC at a very good price.

PC WORLD

REPORT CARD

33MHz 486SX computer
**Peripherals Plus
486SX-33 PCI**

CRITERION	SCORE
Performance	Good SYSmark93: 99.99; only 0.01 points off very good, an above average performance.
Software compatibility	Excellent
Expandability	Excellent
Documentation	Good
Setup and ease of use	Good DOS 6.2 and Windows 3.1 pre-installed; over thirty configuration jumpers on the motherboard, otherwise upgrade is easy.
System design	Very Good Mid tower case; all functions except video are integrated on the motherboard including both IDE and SCSI interfaces; three PCI slots; ZIF upgradable to a Pentium P24T.
Warranty	Not Scored One year return-to-base warranty
Value	Good
Final score	7.2

PRODUCT SUMMARY

Company: Peripherals Plus Pty Ltd, Unit 1, 175 Briens Road, Northmead, NSW 2152.
Phone: (02) 630 3166. **Fax:** (02) 630 1233.
List price: \$3,300 for test configuration.
Features: 33MHz Intel 486SX CPU, ISA bus; two serial and one parallel port; 230-watt power supply; bundled DOS 6.2, Windows 3.1, and mouse.
Peripherals: Enhanced keyboard; 2Mb Avance Logic PCI video card; Samsung 14in "green" colour monitor.
Storage and memory: 340Mb Seagate ST3390N SCSI hard disk with an integrated LB SCSI controller; 3½in 1.4Mb floppy drive; 8Mb of 60ns RAM (72-pin SIMMs, 128Mb maximum); 256K of 20ns secondary cache fitted (maximum 512K).
Pros: Very good system design with both IDE and SCSI controllers integrated on the motherboard; above average performance.
Cons: None significant.
Summary: An unusual PCI system with some innovative design features, above average performance at an average price.

PC WORLD

REPORT CARD

33MHz 486SX computer
Syncomp Mini 486SX-33

CRITERION	SCORE
Performance	Satisfactory SYSmark93: 89.53; below average performance.
Software compatibility	Excellent
Expandability	Excellent
Documentation	Good
Setup and ease of use	Good DOS 6.2 and Windows for Workgroups 3.11 pre-installed; easy access to components; mass storage trays slide out without tools.
System design	Good Large, solid desktop case is solid; clean motherboard; ZIF upgradable to a Pentium P24T.
Warranty	Not Scored Three years return-to-base warranty.
Value	Satisfactory
Final score	6.5

PRODUCT SUMMARY

Company: Syncomp Australia Pty Ltd, 4 Wetherill Street, Silverwater, NSW 2141.
Phone: (02) 748 4777. **Fax:** (02) 748 4828.
List price: \$3,795 for test configuration.
Features: 33MHz Intel 486SX CPU, ISA bus; two serial, one parallel and one games port; 200-watt power supply; bundled DOS 6.2, Windows for Workgroups 3.11, and mouse.
Peripherals: Enhanced keyboard; 2Mb Prisma VLB video card; Mitsubishi 15in colour monitor.
Storage and memory: 320Mb Fujitsu M2622T hard disk with a VLB IDE controller; 3½in 1.4Mb floppy drive; 8Mb of 80ns RAM (72-pin SIMMs, 64Mb maximum); 256K of 20ns secondary cache fitted (maximum 256K).
Pros: Easy upgradability.
Cons: Slower than average; above average price.
Summary: A solid system but underpowered and overpriced when compared to the competition.

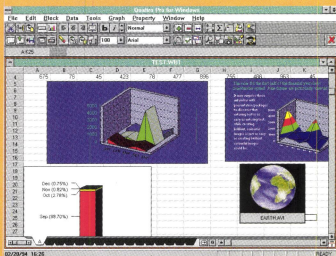
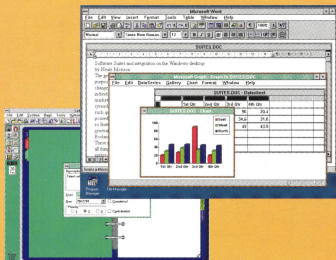
SOHO

Small Office, Home Office

PC

APRIL 1994

Integrated software suites for small business



Line sharing & protection

Hardware devices to improve communications



Tools of the Trade

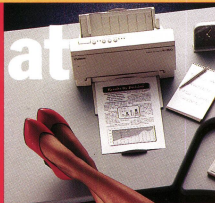
A guide through the hardware & software jungle

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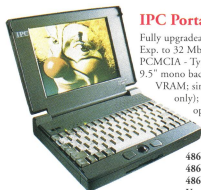
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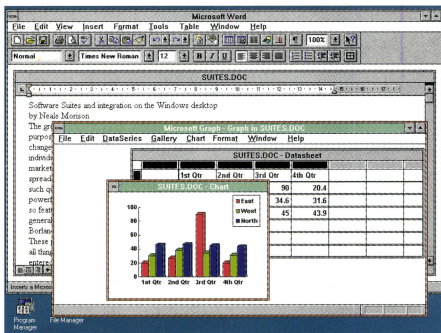
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Software suites and integration on the Windows desktop

Integrated software suites can turn your Windows desktop into a single, powerful application

By Neale Morison



The wonderful thing about the personal computer as office equipment is that it's a general purpose machine.

It can fit itself to a huge range of needs and personalities, with just a change of software. Despite the universally acknowledged truth that we're all individuals, our needs are often surprisingly similar, and as the great vendors of horizontal market software have discovered, everybody needs certain packages: a word processor, a spreadsheet, a database tool, a graphics tool.

Hence, the birth of software suites. These software packages are

Word for Windows provides its graphical facilities through integrated sub-applications



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When the latter was tested in a major U.S. survey, more than half the respondents couldn't tell the difference from laser output.

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Finally, if the speed, the blacks and the colour quality have not convinced you, consider one more important

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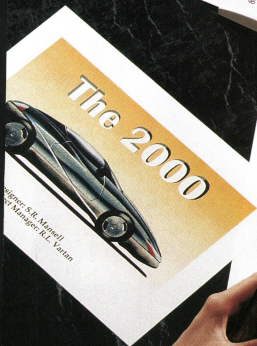
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The 2000 - Projected Sales

Units Per Month (000)

100
80
60
40
20
0



Designer: S.R. Mansell
Project Manager: R.L. Vartan



The



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Project Manager: R.L. Vartan

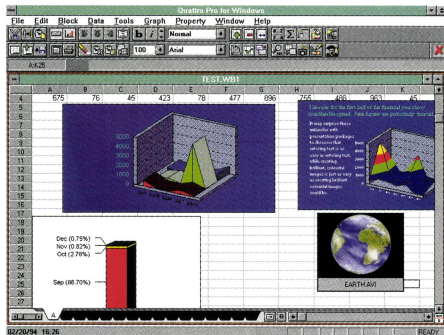


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Quattro Pro 5.0, the spreadsheet in Borland's package, with charts that can also be run as a presentation slide show and an OLE embedded video for good measure

so feature rich that smaller vendors can't afford to compete, and the market has become the exclusive property of Lotus, Microsoft and Borland.

The packages fulfil general needs, but it's difficult to make the single item of software that is all things to all users. Ever since the pioneering days of personal computers users have entered and manipulated data in their database application, and wanted to have the same data in their spreadsheet without rekeying it. They've wanted to make use of the fancy charting facilities in their spreadsheet to add a graphic to their word processor document. In the old days of DOS it was not easy to do, and for each case of application to application transfer there was a different solution.

Windows integration

With the success of Microsoft Windows has come an environment in which applications can integrate in a way impossible under DOS. Word processors can contain spreadsheet data, and spreadsheets can contain graphics and text produced in a word processor. We are gradually moving our focus of work, away from the application, and toward the document we are working on. The

Windows clipboard was the first and simplest medium by which applications exchanged information, by cutting a bit of text, data or graphics from a document produced in one application and pasting into another. This concept was extended by OLE (Object Linking and Embedding) and DDE (Dynamic Data Exchange). OLE and DDE are specifically designed to help create a document-centric environment.

Data pasted from the clipboard with a DDE link follows any changes made to the source data in the original application. When you change the original data in your Quattro Pro spreadsheet, the data "paste linked" into your Word for Windows document also changes. OLE supports inserting objects, such as spreadsheet blocks or graphics, "belonging" to another application, into a document. When you need to edit an OLE object, clicking on it brings up the parent application, with full editing features. When you update the object and return to your original application, the inserted object reflects editing changes. OLE is intended to allow you to attach the functionality of one application to another. In the first version of OLE it worked, but had the disadvantage of switching

completely from one application to the other. The link didn't feel seamless.

Microsoft's second release of its OLE specification, OLE 2, makes a further move toward document-centricity. If you are working on a document within your word processor, and choose to insert a spreadsheet chart object, you can simply click on the chart in the word processor document to edit it in place, with full access to the spreadsheet facilities through altered menus and tool bars.

Cutting and pasting, OLE and DDE are intended to look seamless to the user, but it requires elaborate programming from the vendors to package their objects in the right form to be exported and provide the facilities to import them. Results have been impressive in the chief products of the major vendors. You can perform activities of remarkable technical intricacy but doubtful utility, like pasting a video object into a spreadsheet, which provides a full multimedia experience when you click on it. However, while applications from different vendors can integrate very well under Microsoft Windows using the clipboard, OLE and DDE, there's no doubt that applications created by a single vendor, with the specific

intention of integrating, work considerably better, because of the intranet communication between the departments developing the software packages.

Products from a single vendor have other integrating features. The vendor can provide a uniformity of interface design, right down to using the same tool bar icons to indicate similar functions. Borland uses an object oriented development approach which allows it to share modules easily between applications, so that one application may behave exactly like another when performing certain functions. Microsoft has decided to generalise the macro language used within its applications, and has already released Excel 5.0 with Visual Basic for Applications (VBA), a subset of the Visual Basic language.

When all its applications share VBA, power users will be able to achieve detailed integration, automating and customising their entire Windows desktop as if it were a single application.

In Microsoft's case the developers of application software are not only working closely with each other but also with the developers of the Windows environment and as might be expected Microsoft's applications use the integrating features of the environment to good advantage.

So there's a lot to be said for buying a suite of products from the same vendor, and even more to be said for saving huge amounts of money by doing so. Suites tend to go at a price lower than what it would cost to buy both the spreadsheet and the word processor separately, and include other products as well.

Workgroup enabling

The more suites you buy the more you save, and if you have several users connected on a network you'll benefit from the workgroup features which have become part of all the suite packages. Workgroup facilities extend the idea of applications sharing data, to allow users on separate machines to share data and link applications over the network. Any sort of network enabling tends to be

spruiked as workgroup enabling, but there are features in the applications of all suites that will help you work together with your colleagues.

Of the three suites, two contain workstation licences for mail products, but there's an additional cost if you want mail. You also need a mail server licence. You get a Microsoft Mail server licence in Windows for Workgroups.

Microsoft Office

Microsoft Office combines Word 6.0, Excel 5.0, PowerPoint 4.0 and a workstation licence for Microsoft Mail. Microsoft has kept the application interfaces consistent between applications.

They all have Wizards, tabbed dialogue boxes for configuration fiddling and shared icons. Microsoft has achieved some economies by adding charting and graphics sub-applications that can be shared by all Windows applications through OLE. There are features that allow drag and drop to operate between applications.

In the Microsoft suite, workgroup capabilities are provided by the integration of mail into applications as a general transport mechanism. On the File menu of the applications there's a Send option, which when selected fires up Mail and creates a mail note that encapsulates the application's current document. You can add a few explanatory notes and send it off. There's a routing feature that also uses mail to route documents between members of a workgroup.

Microsoft provides other workgroup facilities in Windows itself.

Microsoft Office

Software suite that comprises Word 6.0, Excel 5.0, PowerPoint 4.0 and a workstation licence for Microsoft Mail
Price: \$1,095; the Professional version sells for \$1,210

Microsoft Australia
 Phone: (02) 870 2100
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Windows for Workgroups 3.11 includes Mail and offers networked DDE, and Schedule+, with the ability to schedule using shared diary information from workgroup members. Windows for Workgroups isn't part of the Office package, but it's a recommended upgrade if you require Workgroup facilities.

Word 6.0: It is the latest release of Microsoft Word, which skipped a few version numbers. It's a fine word processor, a trend-setter in Windows application design, with a well designed multiple document interface for editing many documents simultaneously, all the features of Word 2.0 and more too numerous to mention. Its toolbar includes icons to fire up Microsoft Excel, and separate drawing and charting sub-applications that smoothly integrate to provide full graphical features.

Excel 5.0: A new release with features that compete with the latest Windows spreadsheets from Lotus and Borland. Spreadsheets have gotten completely out of hand in feature competition, which is good for users as long as they have large hard disks and powerful systems. Visual Basic for Applications, mentioned above, is one feature that the others don't have.

PowerPoint 4.0: A richly featured presentation package that includes IntelliSense technology, a system that tries to second guess you so that the more obvious things are done automatically. It's great when it works. It provides Wizards to help you create presentations with an artist-designed look, and can export an outline to Microsoft Word.


Microsoft Mail: A full featured PC Mail system that offers the ability to attach multiple documents from Microsoft and other applications to messages. Recipients click on them to fire up the applications and display them.

Office Manager: A toolbar that floats around in Windows, with icons for switching to each Office application.

Microsoft Office Professional

The Professional version costs \$1,210, and includes Microsoft Access as >

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Free lifetime toll free technical support with guaranteed 5 minute response			✓
Guaranteed nationwide on-site service response by the next business day			✓
Free custom system configuration and integration of peripherals e.g. modems, CD ROMS and network cards			✓
Delivered to order to your door within 7 working days			✓
Built in future-proofing with Pentium™ Technology upgrades			✓
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Proven customer satisfaction, with 18 world-wide awards to prove it			✓
The stability of \$2 billion FORTUNE 500 company with subsidiaries in more than 25 countries world-wide and outlets in over 100 countries			✓
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AND WHICH ONE DELIVERS TRUE 64 BIT BUS PENTIUM MACHINES.

Pentium Processor Architecture

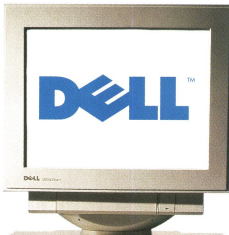
Pentium optimised architecture – 60MHz or 66MHz available • 256Kb secondary write back cache on 64bit processor bus • Pentium processor on 64bit processor bus • All system main memory on 64bit processor bus • Supports up to 192Mb of memory.

Bus Architecture

64bit, 66MHz processor bus with a maximum total bandwidth of 528MB/sec • EISA support for bus-mastering • Both internal and external PCI bus • PCI internal bus-mastering high performance SCSI-2 interface • Five 32-bit bus mastering peripheral slots – All 5 can be used as EISA/ISA slots, or 3 EISA/ISA and 2 PCI.

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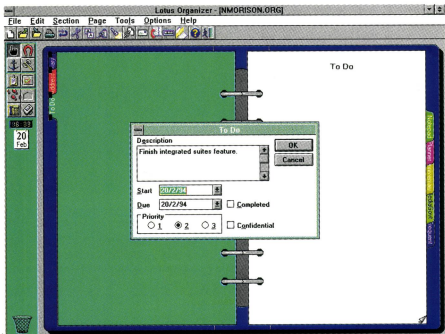
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Lotus Organizer, a personal information manager that emulates a Filofax, with address, diary, scheduler and calendar facilities and a wastebasket that spouts real flame

well as the other Office applications. Access is an excellent database system for power users, perhaps a little too fancy and feature rich for the user who knows nothing of relational databases. However it's a great environment in which to learn.

Borland Office 2.0

Borland Office includes WordPerfect 6.0 for Windows, Quattro Pro 5.0 Workgroup Edition, Paradox 4.5 Workgroup Edition, Desktop Application Director and the Workgroup Desktop.

Borland is famous for its interfaces, and has often been the first with a feature like notebook tabs for 3-D spreadsheets, and the now ubiquitous right click for object editing. Borland's workgroup enabling follows a somewhat different approach to Microsoft's, using Borland's OBEX (Object Exchange) technology. The system can sit on top of most electronic mail systems or any local-area network, and uses a publish and subscribe approach to share common documents.

The creator of a document publishes it, using the Workgroup Desktop, which stores the published version of the document in a place

accessible to colleagues. The subscribers to the document use the Workgroup Desktop to register for a published document, which they can insert into any of their local Borland applications. The subscribed document then receives updates whenever a new version is published. Borland products can also make use of the network mail, OLE and DDE facilities in Windows for Workgroups, and Borland claims OBEX gives them the edge.

WordPerfect 6.0 for Windows: Borland teamed with WordPerfect to include this word processor in the Borland Office suite. It's a favourite

with ex-WordPerfect for DOS users, of whom there are many, and provides expert help with coaches, templates and an ExpressDocs feature. WordPerfect Draw is a sophisticated vector drawing sub-application. You can choose to use either WordPerfect icons or Borland icons.

Quattro Pro 5.0 Workgroup Edition: Quattro Pro provides a huge range of features, and Borland has made great strides in ease of use with its notebook tabs and right mouse click editing. Charting facilities are very powerful. Quattro Pro makes up for the absence of a presentation package in the Borland Suite, by providing a very full featured presentation system as a spin off from its chart editor.

Paradox 4.5 Workgroup Edition: Paradox is a very fine PC database, with enough power to offer a complete application development environment and an interface that is quite accessible to the naive user. It's more powerful than Access as a database development environment for programmers and power users, and offers a very attractive interface.

Desktop Application Director: This is a floating toolbar for selecting applications and functions in the Borland Office.

Borland Office 2.0

Software suite that combines WordPerfect 6.0 for Windows, Quattro Pro 5.0 Workgroup Edition, Paradox 4.5 Workgroup Edition, Desktop Application Director and the Workgroup Desktop
Price: \$995

Borland International (Australia)
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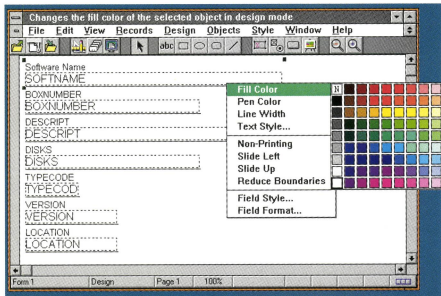
Name

Address

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Mail to POBox 1200 Lane Cove NSW 2066, or

Fax to (02) 428 5460, or tel (02) 418 6033



Lotus Approach provides a very simple database, with far fewer features than Microsoft Access or Borland Paradox, but with just the right interface for the undemanding user

Lotus SmartSuite

The Lotus SmartSuite includes 1-2-3 for Windows, Ami Pro, cc:Mail, Freelance Graphics, Organizer, and most recently Approach. That makes it the suite with the most applications. It also has workgroup features, particularly in 1-2-3's Version Manager, and integration between cc:Mail and Organizer's scheduling features.

1-2-3 for Windows version 4: This is a hot spreadsheet product, as befits the descendant of the great DOS spreadsheet. Lotus has completed its transition to Windows with honours, and provides features not available in other spreadsheets such as in cell editing and single cell drag and drop. There's also in place editing for graphs. A Version Manager feature allows data to be consolidated from different versions of a single spreadsheet, a useful workgroup feature.

Ami Pro: Ami Pro offers powerful features and an attractive interface that makes them easily accessible. It's particularly appealing if you're wanting to use it more in the desktop publishing area, with fancy layout and graphics.

cc:Mail: Lotus has created a house style which is very evident in the tool

bar layout and interface of cc:Mail and Organizer. cc:Mail provides for multiple document attachments, filtering rules and many other excellent features.

Organizer: A personal information manager, set up to look just like a Filofax. Its whimsical interface hides some very rich features, but its integration with external databases is limited.

Freelance Graphics: This is a presentation package with a simple interface. A system of formatting templates, called Smartmaster sets, helps you save time creating presentations. Freelance is enabled for multimedia, so you can drop sound and video into your presentation slides, useful for jolting somnolent audiences into alertness.

Lotus SmartSuite

Software suite that includes 1-2-3 for Windows, Ami Pro, cc:Mail, Freelance Graphics, Organizer and Approach
Price: \$1,150

Lotus Development
 Phone: (02) 350 7700
 Fax: (02) 299 8881

Approach: A simple database system, with far fewer features than Paradox or Access and, probably as a result, a far more accessible user interface. This is definitely the product for the home or small office user who just wants to keep track of a few things, and doesn't want to have to learn relational database theory, SQL, and proprietary programming language to do it.

Which one?

To answer that question, answer this one. Which word processor are you using now? Which spreadsheet? Get the suite that comes with the application you use most, like most and are most familiar with. If you're buying for several, reach a consensus.

The issue is not really which is the most powerful package. They all contain excellent products, some of which you'll decide you need more than others. It's a matter of where you do the core of your work. The whole point of integrated software is that you'll be able to stay largely in that product, and link into the functionality of the other products in the suite.

The price is definitely right. If you need just two of the applications in a suite, by buying a bundle you'll save a bundle. ■

Tools *of the* Trade



Once armed with a little knowledge, outfitting your business with the right tools is simple. Here's a guide through the hardware and software jungle, with tips for bagging a few bargains

By Daniel Tynan and Joe Hutsko

Hardware

It's a jungle out there, and running a business without the right tools — computers, printers, fax machines, and more — is like wandering into a lion's den wearing a lamb chop necktie. Fortunately, you have a lot of options, and prices are better than ever. But before you begin your office shopping safari, you'll want to pin down exactly what equipment you need.

There are two ways to hunt for hardware. You can take the brute force approach and buy the most powerful computer you can afford. Or you can be cunning: figure out what kinds of jobs you need to do, choose the software that will let you do them, then find a machine that runs the programs you've picked. The first approach is simpler, but the second will save you money.

Remember: no matter what machine you buy, six months later a sleeker, faster computer will come along and the cost of your current system will plummet. You can do two things to minimise the pain. First, buy a computer that can grow

with your business, with room for additional memory and storage and faster processors as your needs expand. Second, buy a system near the top of the hardware ladder, where the price/performance ratio is best.

It helps with the pain control if you concentrate your mind on the fact that a properly applied computer system will pay for itself several times over in the first year, let alone over its three-year lifespan (which we'll probably see lengthening to five years as the PC market slowly matures).

For PCs, price differences have shrunk to where there is no longer much point in buying anything smaller than a 486, though which type of 486 PC you need depends on what you plan to use it for. If all you want to do is write letters, keep a list of names and addresses and track expenses, look for a 25MHz 486SX with 4Mb of RAM. For Macintosh users, an LC III with 8Mb of RAM and a colour monitor handles the basics. Windows and Mac users who work with graphics or like to run several programs at once will want a ►

ALL-IN-ONE WONDERS

If your software needs are basic — you're new to computers or your tasks are simple — consider buying an integrated package. Integrated software combines key programs — such as a word processor, a spreadsheet, and a database — into one inexpensive, do-it-all package. The constituent programs are typically less powerful than their full-fledged counterparts, but instead of buying, installing, and learning three or more programs, you deal only with one.

If you find later that your integrated package is holding you back, you can always upgrade to the industrial-strength word processor, spreadsheet or database of your choice.

Some of the more popular integrated packages include ClarisWorks (Windows and Mac), Lotusworks (DOS), Microsoft Works (Windows and Mac), and PFS Windows/Works.

SUITE TALK

If you're setting your sights higher and want separate, full-featured programs, check out a suite. Suites combine three or more programs for little more than the retail price of any single program in the bundle.

Price is only part of the allure, though: all the programs in the suite are fine-tuned to work seamlessly with one another — for example, in Microsoft Office, you can use your mouse to drag data directly from Excel to Word.

In Lotus's SmartSuite for Windows you get Ami Pro, 1-2-3, Freelance Graphics, Approach, and Organizer (word processor, spreadsheet, presentation graphics, database and personal information manager). The Microsoft Office suites for both Windows and Macintosh offer mix-and-match combinations of programs, including Word, Excel, Access, PowerPoint and Mail (word processor, spreadsheet, database, presentation graphics and electronic mail). Borland's suite includes the Windows versions of WordPerfect, the Quattro Pro spreadsheet, and the Paradox database.

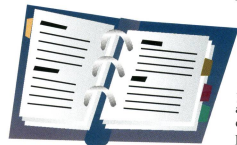
machine with a little more grunt, such as a 33MHz 486DX with 8Mb of RAM, or Apple's Quadra 610 with 16Mb of RAM.

Professional accountants, desktop publishers, engineers or anyone else who performs heavy data or number crunching will need to roll out the big guns — a 66MHz 486DX2 with at least 8Mb of RAM or one of Apple's Quadra 800 family.

The Quadras cost more, but many sport extras not found in their PC cousins, like built-in networking, video conferencing, and voice recognition.

Graphics: easy on the eye

Even a fast computer can look slow when it's redrawing a Windows



screen. But it's not the monitor that's causing the slowdown, it's the graphics board inside the PC. If you do a lot of PC graphics work, get a system with a graphics accelerator board. That same board will also get you better resolution — the number of pixels displayed on-screen. While Macintoshes offer one standard screen resolution, most PCs let you choose between 640 by 480, 800 by 600, or 1,024 by 768. Higher resolutions let you see more information at once, but they also mean that everything on screen gets smaller. If you want to try 1,024 by 768, you'll want a bigger monitor than the standard 14in model. In any case, the graphics board must have a refresh rate of 70Hz or higher to avoid eyestrain caused by flickering.

Storage room with a view

A few years ago, a 100Mb hard disk seemed as limitless as the Simpson Desert. Now it has you looking for a shoe-horn. The main culprit is

Windows, which sucks up 15Mb to 20Mb of space all by itself and is associated with some downright obese applications. Add a word processor, spreadsheet, database and some data files, and you can kiss most of that 100Mb good-bye. It's even worse for users who work with graphics, whether in Windows or DOS: a typical 100 by 150mm colour image will consume more than 5Mb. To be safe, buy a system with at least 200Mb to 250Mb of hard disk space and use a file compressor to double that in real terms.

Even good hard disks go bad, and if you don't back up your disk religiously it will take your data with it. Tape backup drives like Colorado Memory Systems' Jumbo 250 make backing up big disks a breeze.

While you're adding disk drives, be sure to save room for a CD-ROM drive. It's worth the extra few bucks to go for a double-speed Kodak Multi-session Photo CD compatible model, just to keep your multimedia options open. More and more software is being shipped on CD-ROM disks, from popular programs like CorelDraw to reference titles. The *Macquarie Dictionary* is now available in CD-ROM.

Notebooks: moving targets

Some people never leave the office; others take it with them when they go. If you're a traveling professional, consider making a notebook your desktop machine and buying a colour monitor and keyboard for the office. Machines like Toshiba's T1900 and Apple's PowerBook Duo 250 pack as much power as computers four times their size, although at a rather higher price. Key factors to consider in a notebook: weight, screen quality, and battery life. If you travel interstate frequently, look for at least four hours of battery life and strong power-saving features. Check the recharging time, too.

Tracking prints

Computers and printers go together like Tarzan and Jane. There are three main species: dot matrix printers, inkjets, and lasers. At the low end of the price scale, a 24-pin dot matrix

model like Epson's LQ-570 is great for cranking out personal correspondence and printouts for your files — and the only choice for printing multipart carbon forms and extra-wide documents.

If you need to create documents dressed to impress, inkjets like Apple's StyleWriter II are a better choice, offering near-laser-quality text and graphics for a low to medium price. Travelling professionals can take along a portable one, like the Citizen PN-48 thermal transfer printer or Canon's BJ-10ex bubblejet. Need to produce colour charts and graphs? Colour dot matrix and inkjet printers are available at the economy level.

For fast, sharp output, nothing beats a laser. Some exciting new models use the internal graphics processing capabilities of Windows and combine high quality and speed with low price. Lasers can be shared by several users, making them an economical choice for networked offices.

If high-quality desktop publishing in colour or monochrome is part of your business plan, the sky's the limit. There's a very wide range of options for balancing price against quality for proofing or limited print runs, so it pays to shop around.

Whichever printer you go for, don't forget the cost of consumables. It's not always the cheapest printer that comes out in front when you compare all-up cost for several thousand pages over the printer's life.

Inescapable fax of life

The fax is every bit as indispensable as the telephone. The only question is whether you should use a separate fax machine or a fax modem and software to use your PC for faxing.

Using the PC saves paper and improves the quality of transmitted faxes enormously, and also automates your fax handling a lot if you get the right software. The biggest drawback is that if you want to send something that is already on paper, you need a scanner to get it into your PC first.

Fax modems always have a secondary data capability: they let you swap files from one computer to

another, and log on to bulletin boards and public e-mail services like CompuServe.

It can be useful to have both: that way, you can craftily scan things in or print them out by sending faxes to yourself. Of course, with a fax machine, you need two lines, while the fax-able PC on a single line can have software to let it automatically identify incoming calls and operate as an answering machine or receive faxes and data transmissions.

Copy Central

Photocopiers are as common to offices as coffee machines — and just as essential. Unless you live next door to the local copy shop, a personal copy machine can save you time and money. Most fax machines double as copiers, though you have to watch the quality of the copies.

Accessories after the fact

New computers and old wiring often don't mix. If you work in an older building, you'll want a power strip with a built-in surge protector or, if your work is critical, an uninterruptible power supply that gives you enough juice to shut down your computer safely during a blackout.

A glare protector will keep you from squinting when the sun comes streaming through the blinds. If you buy a CD-ROM drive, you'll probably want to go the whole hog and get a sound board and speakers. If you do a lot of mailings, a separate label or envelope printer may save you time and trouble.

Software

Every business runs on software. The trick is to sort through the bewildering array of programs to find the ones that will suit your needs best. No matter how specialised your business is, you'll almost certainly need software to help you manage words and numbers and keep track of relationships and transactions. In the following sections — Words, Numbers, and Information Managers — we'll look at some of the best programs that conquer the basics with finesse, and we'll offer advice on



picking the right software, whether PC or Macintosh based.

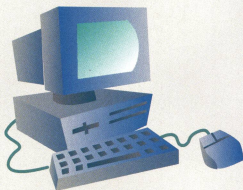
Words

Current word processors are all Windows-based and all boast Wysiwyg (What You See Is What You Get) features, which means documents will look in print the way they look on screen.

Fonts and paragraph formatting, spelling and grammar checkers, thesauruses, style sheets, macros, outlining, tables, and the capability to create form letters and perform mail merges with database documents and files are all standard fare.

The leading Windows word processors — Microsoft Word for Windows, WordPerfect for Windows and Lotus Ami Pro — all feature macros and templates that make producing repetitive documents a snap. All three programs feature icon-based tool bars for quick access to drawing and envelope tools, and single-click formatting options such as bullets and indents.

So which word processor is for you? That depends on the nature of your work. If you do mass mailings, you must have one that can do mail merge. If you want presentation-grade documents, you need to have one with DTP (desktop publishing) capabilities — or a simple word processor and a specialist DTP program. If you do scientific or technical, or anyway long and complex, documents, your word processor needs automatic indexing, outlining and section management. If, on the ▶



SAVING ON HARDWARE AND SOFTWARE

The hard stuff

Yesterday's technology today

Unless you're running some monster software like Windows NT or a CAD program, you probably don't need a Pentium. Mid-range 486s offer the best balance of speed and price.

Brand X

Smaller, lesser-known companies generally offer the best prices. They also go out of business with greater frequency, which means there may be no-one around to fix your PC if it breaks. Before you buy, check with the Department of Consumer Affairs to see if the company has had problems filling orders or meeting customer needs.

Build your own

Systems integrators can assemble a computer cheaply from component parts.

Previously owned PCs

Buying a used PC is like buying a used car — it helps if you know how to fix it. For the technologically savvy, used machines are the cheapest way to go.

Plastics

Finally, when buying hardware or software, always pay with credit, or at least by COD. That way you can cancel the charges if the products you've ordered come in DOA — or not at all.

Bundled buys

You get the best breaks on software when you're purchasing hardware. Most new computers bought through mail order come bundled with software at no additional cost. And if you're buying your system from a local dealer, a little negotiation can often net you extra software as well.

Competitive upgrades

Some vendors will practically give you a copy of their software if you're upgrading from a competitor's product. Check with the vendor to see what qualifies for a competitive upgrade. You may be surprised: an old piece of software you have around the house could save you hundreds of dollars on the program you really want.

Integrated apps

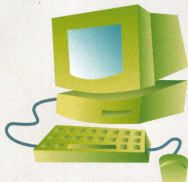
Integrated programs typically combine a word processor, spreadsheet, data management, and more into one easy, low-cost package. If you're not a power user, an integrated app may be all the software you need.

Suite deals

Software suites are like integrated applications on steroids: instead of one low-power app, you get three or four full-fledged ones for a fraction of their combined cost.

Sharing the wares

Shareware — programs distributed free on a tryout basis — are inexpensive, and many are surprisingly powerful. Best of all, if you don't like the program, you don't have to pay. Shareware programs can usually be found on electronic bulletin boards and on-line services such as CompuServe.



other hand, all you do is simple correspondence, Windows Write is the best value for money around — it comes with Windows and costs nothing.

There are also several "entry-level" word processors that perhaps lack mail merge or a macro language but otherwise have good editing and basic DTP, such as Lotus Write and Q&A Write. They are worth looking at, not only because they cost less but also because they take up less disk space.

The best way to find the word processor you need is to make a list of exactly what work you need to do (and think you might need to do in the near future) and then discuss those details with some dealers.

Numbers

The bottom line in any business is numbers. And when it comes to manipulating figures in general, nothing offers more power and flexibility than a spreadsheet program.

In fact, spreadsheets are indispensable tools throughout business because budgets, sales projections, and complex analyses of business figures are a firm's lifeblood.

For day-to-day accounting, spreadsheets can be used but lack many advantages of even entry-level accounting packages, such as Quicken.

The basic differences is that spreadsheets shine when it comes to manipulating large arrays of numbers where you need to do changes all over the place; in accounting, you're interested in permanently recording a lot of numbers and extracting reports from those numbers without changing them.

Most businesses will need a spreadsheet and an accounting package, but if your business is a small one that doesn't need projections and long-range planning because the scope for change just isn't there, the accounting package alone will fill your needs.

Which spreadsheet? Well, as in the case of the word processor, there's a wide range of capabilities. The market leaders Excel, Lotus

1-2-3 and Quattro Pro are large and powerful and bristle with every imaginable function.

One has stronger graphics than another, which may have greater database capabilities and so on; again, you'll need to define the job and then look at detailed capabilities. If your needs are limited, this may be a waste of money and something of the order of the spreadsheet function of one of the integrated packages may do your job.

As always, there are products that specialise in a particular aspect. CA-Compete and Lotus Improv are multi-dimensional spreadsheets at opposite ends of the price scale; they have this in common that they make it particularly easy to look at an array of numbers from different sides.

A really intriguing specialist is Crystal Ball (which is an extension to Microsoft's Excel): it calculates risks. If you face a complex business decision and want to know the chances of success (and how much success) this is a powerful tool that can repay its cost in just one use. Coming back to specialist accounting packages, there's a product for every size business.

The entry-level systems are really elaborate cash books with payables and receivables added, but you only have to take a small step up to the likes of Mind Your Own Business (M.Y.O.B.) to get a full-featured accounting system that also includes payroll and inventory.

Information managers

A personal information manager, or PIM, can be a lifesaver. Most contain four key components: a name and address database, a calendar, a to-do list for tracking tasks and projects and a notepad for jotting down ideas and project details. Some PIMs also include a phone log for tracking phone calls, as well as an auto-dialler that works through your modem.

All good PIMs let you print reports and export data to other pro-

grams, such as word processors for mail merges. If you don't need all those features, consider simply using the Windows freebies Calendar and Cardfile. Calendar has an alarm for appointments and Cardfile can dial telephone numbers for you.

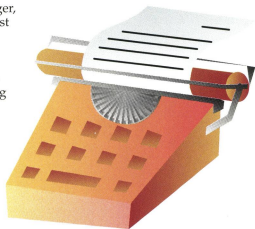
An all-in-one PIM reduces duplicate work by letting you link items of different types, such as names, appointments and to-do items. For Windows users, choices abound. Lotus Organizer wins in the categories of good looks and ease of use.

Modelled after popular paper-based organisers, Lotus Organizer feels familiar from the word go. It has all the features you need but is weak in the follow-up area and individual contact history.

Other Windows PIMs to consider include YourWay, Info Select for Windows and PackRat.

If your livelihood depends on maintaining contact with clients, take a look at specialised contact management programs such as the Australian product Tracker and Contact Software International's Act! Each program ties schedule and project events to client records and provides regular reminders for contacting clients by phone, fax, letter, or in person.

Given the competitive nature of business today, this sort of attention to detail can make the difference between staying in touch and staying in business. ■



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System Architect is the price/performance leader in CASE technology. Running under MS Windows or OS/2 PM, it supports a wide range of techniques and methodologies, including: Yourdon/DeMarco, Gane & Sarson, Ward & Mellor (real-time), SSADM, ER diagrams, decomposition diagrams, structure charts & state transition diagrams. An integrated, customisable dictionary and SQL-like reporting language complete the toolkit.



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Appropriate For All Sizes of Organisations.

System Architect is easy to use with only a small investment required to train staff. Stand alone versions are available for small projects and design teams. The network version is suited to the largest of projects and organisations, with multiple levels of record locking on project models. Many large companies and government agencies are included in over 3,000 users of System Architect worldwide.

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System Architect incorporates a growing range of optional modules, providing a comprehensive tool set for analysts, designers and development staff.

SA Schema Generator: Allows the generation of database schema from entity models. Schema generation is available for eighteen environments and databases, including COBOL, C, PROGRESS, DB2, Oracle, Ingres, SYBASE and a range of other SQL based languages.

SA Reverse Data Engineer: Provides reverse engineering of SQL databases (DB2, Informix, Oracle, SYBASE, SQL Server) into ERD and corresponding dictionary definitions. Also generates graphic screens and menus from .DLG and .MNU files.

SA/PowerBuilder Link: Provides a link between System Architect's front-end analysis/design and PowerBuilder's integrated development environment. Simplifies the creation of robust client/server applications by allowing developers to seamlessly exchange design information between the two products.

SA Screen Painter: Allows the creation of screens for GUI or character based applications. Generates the corresponding screen dialogs and COBOL screen sections.

SA Object Oriented Analysis & Design: Supports Booch91 and Coad/Yourdon methodologies.

Look No Further!

System Architect is truly the price/performance leader in CASE technology. Bringing CASE to the Real World at a fraction of the price.

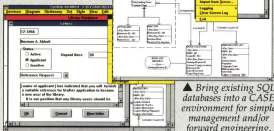
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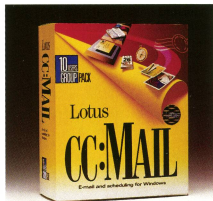
cc:Mail Group Pack

LOTUS has launched Lotus cc:Mail Group Pack, an all-in-one electronic mail, calendaring and scheduling package for small businesses and departmental workgroups. It combines cc:Mail with the group scheduling version of Lotus Organizer. The cc:Mail Group Pack comprises: a copy of cc:Mail for Windows release 2.0; a copy of cc:Mail for MS-DOS release 4.02; a copy of Lotus Organizer 1.1; 10-user licences; and a set of documentation.

Organizer's 1.1 group scheduling capabilities allow people to automate the scheduling of meetings. The cc:Mail for DOS licences included in the pack lets users that do not have Lotus Organizer still be included in the meeting schedule.

An introductory offer allows current e-mail users to trade-up to cc:Mail for Group Pack before May 31, 1994 for \$995. The package will sell for \$1,295, until June 1, then it will sell for \$1,695.

Lotus Development
Phone: 008 252 408



The cc:Mail Group Pack is an all-in-one e-mail, calendaring and scheduling package for small businesses

Invoicing in Quick Accounts

QUICK Accounts, from Sybiz Accounting, has been upgraded with the introduction of an integrated invoicing, statement and reporting

SOHO SOLUTIONS

Industry-specific products for the small office and home office market

module. Designed for small businesses, Quick Accounts with Invoicing offers a General Ledger, Invoicing, Statements and a variety of reports, graphs and bank reconciliation. It also interfaces directly with Solution 6 and Paxus for external accountants to use. Quick Accounts sells for \$249.

Sybiz
Phone: (02) 906 5088

Resources catalogue

THE AEC Computer Resources Catalogue is a listing of software and data services of special interest to architects, surveyors and civil, structural and construction engineers. The CD-ROM-based catalogue lists over 4,000 entries of software titles of specific interest to the AEC disciplines as well as their sources of supply and support. It also features a directory of services such as printing and plotting bureaus, trainers, technical specialists and information providers. The catalogue lets users access, retrieve and cross-reference information. It is available in both Windows and DOS versions.

CD-ROM Publishers
Phone: (03) 587 0686

Design your home

HOME Series 2.0 is a range of software packages that allows users to design and draw building or renovation plans. Designed for landscape gardeners, do-it-yourself home builders and renovators, three programs are available: Kitchen & Bath, a combined package, Home and Landscape. Features of the software include the ability to view plans as 3-D full colour models; "walk through" their plans; and view finished building projects or garden designs from any perspective, within or outside the home. The Home

Series 2.0 allows different design and decorating ideas to be tested on-screen and includes textures such as wood, concrete, carpet and tile. Once designs are complete the program will generate an automatic shopping list with appliance measurements and specifications. The list can be exported to a spreadsheet program to help estimate project costs. All packages in the Home Series sell for \$99.

Reckon Software
Phone: (02) 550 2666



The Home Series 2.0 packages let you experiment with different design and modelling ideas on your PC

Multi-lingual suite

SCALA is a multi-lingual, multi-currency integrated business software package. Designed to help Australian exporters in the global market, it features the ability to operate simultaneously in 10 languages and 30 currencies. The software is made up of a suite of integrated modules that can be purchased separately or as a package. The package will let users prepare an invoice in English, then convert it into Japanese, applying the Japanese requirements and accounting practices.

Modules available include: invoicing, general ledger, project management, statistics, marketing and stock control.

Scala Australia
Phone: (07) 368 2099

Flatbed colour scanner

STUDIOSCAN is an entry-level desktop colour and black/white scanner. The flatbed scanner can scan three colours in one pass for optimal performance.

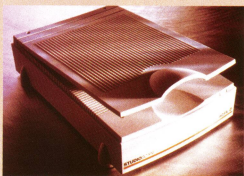
It features an optical resolution of 300 by 600dpi. The StudioScan is bundled with a range of software including; FotoLook and FotoSnap scanner driver; FotoTune LE, colour management for the PC and Mac; and Adobe PhotoShop Limited Edition for image retouching. FotoLook includes a range of tools including unsharp masking, colour saturation enhancement, auto density control and descreening for previously screened halftone images. FotoLook is also Twain compatible.

FotoSnap is an easy to use scanner driver developed for users who do not have any previous scanning experience.

StudioScan will sell for under \$2,180. An optional transparency module will sell for \$910.

Agfa

Phone: (03) 264 7711



The StudioScan from Agfa provides colour scanning for the Mac or PC

More ideas

NEED help coming up with ideas? IdeaFisher for Windows is a creativity tool designed to develop ideas through association and the use of creative problem solving. The program uses word associations to link concepts together and provokes view points and images which can be used to create ideas and concepts for product or marketing developments, advertising or promotional campaigns and different types of corporate communications.

The program is made up of two databases; Question Bank and Ideas Bank. The Ideas Bank offers over 775,000 concepts including topical events and references to popular culture. A major feature of IdeaFisher is that its Idea Bank can be accessed from within the majority of word processing packages by using a Macro command.

Other features include a Randomizer and a Synchronizer function. The Randomizer provides random combinations of a specified subject and the Synchronization

function allows users to call up a number of windows containing associations and scroll through them in controlled synchronised movements.

The Question Bank has been updated and includes additional main and subheading questions. It contains thought provoking questions that allow the user to define a problem, expand ideas, and analyse and evaluate a potential solution.

It sells for \$295.

Step Up Systems

Phone: (03) 427 0168

Build your own notebook

THE Ninja notebook range is based on technology that lets you mix and match components to build notebooks to your specific requirements. Components such as the Intel CPU, RAM, displays, hard disks and the external docking station, can be exchanged and upgraded.

The Ninja range comes standard with two PCMCIA Type II or one Type III slot, a built-in two-button

mouse, and on-board power management. The system offers ships with an internal battery that provides up to six hours life on the mono model. An external AC adaptor also ships with the notebook.

The Ninja range starts at \$4,300.

Chips and Bits

Phone: (03) 696 1911

Drive your monitor

MI-LYN Imports has released a range of mice from MotorMouse Products. It includes replicas of the Lamborghini Countach and the Chevrolet Corvette and combine optical and mechanical tracking. Both mice ship with MotorMouse Cursor Control software enabling users to change the standard arrow-shaped cursor to the car model of their choice.

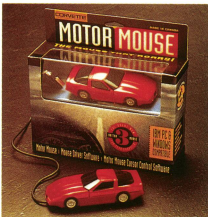
Users can also add the sound of the horn and the engine and change car colour. The cursor is capable of turning 360 degrees and the image grows smaller at the top of the screen and larger at the bottom, producing a 3-D effect.

The mouse ships with drivers for DOS, Windows and OS/2 and users have a choice of two-button or three-button mode.

The MotorMouse products sell for \$106.

Mi-Lyn Imports

Phone: (08) 235 2388



The MotorMouse range includes mini replicas of the Lamborghini Countach and Chevrolet Corvette

Built-in Windows plus 50MHz 486DX2 processor (with coprocessor) for blazing performance.

New brilliant Active Matrix display – 640 x 480 VGA with high-speed video system for lightning fast graphics.

The notebook industry's first 4mm, full-travel keyboard with the look and feel of a desktop system.

ACTIVE COLOUR 486DX2 50MHz POWER. WINDOWS IN 15 SECONDS. – YOUR WAIT IS OVER.

If you've been waiting for an active matrix colour notebook with true desktop power, your wait is over. Thanks to the new TravelMate™ 4000E WinDX2/50 Active Matrix Colour notebook from Texas Instruments.

50MHz DX2 processor with co-processor provides desktop performance in a notebook.

With 256 brilliant, simultaneous colours and a 50MHz 486DX2 processor, this powerhouse doesn't just whisper colour, it screams it.

And yet the TravelMate 4000E weighs a mere 2.8 kilograms, including battery. This convenient size and weight gives you more performance* than the leading 486 notebooks. And the industry's first 4mm, full-travel keyboard gives you the feel of a desktop.

the high-speed video bus and 1MB of video RAM, as well as the full range of connectivity options – snap-on modules for Ethernet LANs, SCSI-compatible devices and an internal 14,400 bps V.32 bis modem with 9,600 bps send/receive fax capability.

For more information about the only 486 notebook family that won five Editor's Choice awards in PC Magazine's August issue, call Syd. (02) 910 3100, Melb. (03) 696 1211 or toll free (008) 024 853.

TI TravelMate 486DX2 Notebooks

Of the leading active matrix colour notebook manufacturers, only TI offers the desktop performance of a 50MHz DX2 processor.

Active Colour Notebook	Weight (kgs)	486 Processor	Speed	Coprocessor
TravelMate 4000E	2.8	DX2	50MHz	Yes
Toshiba T4600C	3.1	SL	33MHz	Yes
Compaq LTE Lite 4/33c	2.9	SL	33MHz	Yes
IBM ThinkPad 720C	3.4	SLC2	50MHz	No

Thanks to built-in Windows 3.1 and useful TI utilities, you can power up to Windows in just 15 seconds. And the TravelMate



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WITH INNOVATION

**TEXAS
INSTRUMENTS**

*Based on industry standard application performance speed tests.

PC WORLD

Best Buy Award, Dec 1993



5 Editor's Choice Awards, 1993

Computer

Editor's Choice Award, Nov 1993

Enterprise-wide forms solution

JETFORM Pacific has expanded its enterprise-wide forms solution package with the release of a series of Director modules, including a "Forms Management" function. Designed as a set of management tools to assist the MIS or administration manager to monitor and control the various electronic forms that can exist across a corporate network. The Director modules include



The Director modules released by JetForm Pacific

Distribution Director, Tracking Director and Fax Director. The Distribution Director is an add-on module that allows automatic distribution of a new form, or reversion to a pre-existing one. The form is then automatically installed on the network.

The Tracking Director allows end-users and the forms administrator to query the JetForm Server tracking database, determining where a form is in its journey.

The Fax Director allows server-based forms faxing.

The Forms Dictionary is an application that works with JetForm Design allowing the storage and retrieval of complete forms or parts in a dictionary by title, category, key words or a "thumbnail image".

JetForm Pacific

Phone: (02) 954 9000

Creative multimedia

CREATIVE Pacific has added to its multimedia offerings with the release of the Sound Blaster AWE32, Video Blaster FS200 and TextAssist.

The SoundBlaster AWE32 is a DSP-based audio card. Based on the EMU 8000 sound generator and effects processor, it delivers FM synthesis, sampled-wave synthesis, full MIDI support, audio mixing and digital effects for high-quality audio.

The VideoBlaster FS200 is an extension to the VideoBlaster family. It includes custom hardware compression chips and its pixel interpolation allows full motion and full screen playback, chroma and colour keying, special effects such as flip and fade, and resolution up to 800 by 600 at 64,000 colours.

Video Blaster SE is an updated version of the Video Blaster. It includes support for S-Video as well

as S-VGA up to 1,024 by 768. It ships with PhotoStyler SE version 2.0 and eliminates RAM limitation.

Creative TextAssist offers speech quality and full control of pronunciation and intonation as well as singing and special effects. An API for developers is also available.

Creative Pacific

Phone: (02) 906 8887

OCR in Windows

XSOFT Australia has announced the introduction of TextBridge, a software program for PCs with OCR in Windows. TextBridge converts most printed documents into formatted text.

The text can be edited, stored, searched and distributed. It can scan and recognise text directly into a Word for Windows document. TextBridge can recognise text in

French, German, Italian and Spanish as well as English.

Automatic page segmentation breaks the document into zones, removes photos and halftones and outputs the recognised text in the correct order.

The software directly drives scanners including: HP ScanJet IIP and IIc, Microtek ScanMaker II plus any scanner or fax modem that produces standard TIFF files, TIFF uncompressed, Group III or Group V. Designed for users in desktop publishing, the public sector and large commercial applications, it sells for \$365.

Fuji Xerox Australia

Phone: (02) 391 5300

Australian CD for kids

PLAYTIME in the Park is an interactive learning adventure designed for children aged 3 and up. According to firmware, "it teaches counting, phonics (initial sounds) as well as developing memory skills, motor skills and creative expression". The program features a family of bears and activities include colouring in, picture pairs, join-the-dots, rhymes, mazes, and matching pictures to words. Developed in Australia, it sells for \$69.95.

Firmware

Phone: (047) 21 7215

Nexus version 4.0

NEXUS Business Software has released Nexus version 4.0. It is the latest release of the Nexus accounting and management software.

Features of the modular designed program include: Executive Information System, which lets managers and directors take an overview of the company; multi-currency, the system allows for any number of currencies with up to five buy and sell rates for each, the system also caters for unrealised and realised profits and losses in exchange transactions; serial number tracking, which allows serial numbers to be traced from purchase

Low-cost scanner

GENIUS Australia has released a low-cost colour handheld scanner that enables Windows users to deliver true 24-bit colour to desktop publications and presentations.

Called the Genius C105 PRO handheld scanner, it is bundled with GO-CR OCR and iPhoto Deluxe image processing software, a user guide, a 16-bit ISA interface card, and a Twain compliant driver. The iPhoto Deluxe software allows users to scan, edit, process and create special effects with images and photographs. It offers JPEG compression allowing users to reduce file size by up to 100 times the original file.

The package also features auto merge functions. GO-CR OCR software allows the merging of documents the size of a full page scanner in both horizontal and vertical position. The Genius C105 PRO handheld scanner sells for \$718.

Genius Australia
Phone: (08) 235 2388



The Genius C105 PRO low-cost colour hand-held scanner

through to sale; sub-definition of stock codes, which lets users monitor stock levels by stock code down to sub-codes; batch tracking; and Information for Australian Q.A Standards.

Other features include tailored menus, job streaming, user-defined reports, multi-warehousing, a choice of stationary layouts, searching and reporting, an automatic setup option, Hot Key facilities, end of month lockout and error and system logging.

It is available in two levels; 5 Series and 7 Series. 5 Series is aimed at smaller companies, it is a full accounting package with most of the features of 7 Series.

7 Series is more powerful. It features improvements in foreign currencies, First In First Out (FIFO), and stock control by size, or colour. The product can also be customised to user requirements.

Nexus Business Software
Phone: (02) 956 3826

Q+E Database Library version 2.0

A DEVELOPMENT tool that adds ODBC compliance to all development environments has been released by Azonic.

Called Q+E Database Library version 2.0, it provides developers with programmatic access to a variety of database management systems (DBMS).

It includes an application

program interface and ODBC-compliant drivers for over 20 major SQL and PC databases.

The program includes the Q+E Query Builder which guides the user through the creation of database queries. The products capable of taking advantage of Q+E Database Library include; VisualBasic, ToolBook, Power Builder, ObjectView, Actor, Smalltalk, CA-Realizer, SQL Windows, 1-2-3, Word and Excel. Q+E Database Library 2.0 sells for \$1,095 per developer. Upgrades are also available.

Azonic
Phone: (02) 878 4444

Intelligent Terminal

Terminal is an Australian designed and manufactured electronic point of sale terminal. It combines functions of the traditional electronic cash register with intelligent computer terminal technology.

It consists of a 120-key user definable keypad, a 16-character by two line display, and sockets for a range of peripherals such as cash drawer, customer display, bar code, magnetic stripe reader and receipt printer. It measures 325 by 265 by 60mm and offers fail safe operation and transaction integrity protection. The VersaTerm is designed so it is not reliant on the host computer for operation.

The transaction integrity protection ensures that no transaction is erased from the VersaTerm until it has been received and verified by the host computer.
Quest International Computers
Phone: (03) 763 8555

If you have any industry-specific products for the small office home office market, please send information with colour pic or slide to

Monique Haylen
PC WORLD

PO Box 295, St Leonards, NSW 2065

CARING and SHARING

By Christopher Webber

If you have a fax/modem and a computer, you may be having trouble getting your answering machine and telephone to work at the same time. This article suggests how you can solve this kind of problem. It also shows you how to protect your computer/communications system from damage by lightning. Storms cause a lot of damage to computers in Australia — when I used to work for a state-wide network, I would know where a storm was happening because there'd be a shower of calls from that area!

SHARING LINES

Fax switch

This is the device most people have heard about. It directs calls to your telephone or fax.

Fax switches work well, but every time a caller rings he or she hears an annoying message: "This is a fax switch. If you are sending a fax, say 'fax'." If the switch hears nothing, it assumes a telephone call is coming in, so it rings the telephone. At this point an answering machine can cut in, if necessary, to take a message.

Unfortunately, the fax switch message can be distorted and incomprehensible. And the switch itself is listening for any sound — the noise from a car phone, or you saying the wrong word, will cause the call to be diverted to the fax. If you have extensions on the same line, the fax switch will stop them from ringing.

A fax switch must be connected to the primary telephone plug and needs a power socket too. By "pri-

Hardware devices to improve communications

mary" I mean the telephone plug into which calls first come and which controls any extensions from it. You can locate your primary plug if you know how your telephone system is wired (it's the socket with two wires leading into it), or by asking a technician. On some systems, the primary plug has a black cable leading into it.

You can buy a fax switch for between \$200 and \$300 from any electronics store.

Easy-Connect, Easy-Connect Plus, and FMX

The Easy-Connect shares a line between a fax (or modem) and an answering machine and telephone. It's the latest technology in line-sharing devices, and its price reflects the fact. It needs a telephone plug and power socket and, like a fax switch, must also be connected to the primary telephone plug.

The Easy-Connect is an intelligent, transparent device. The caller doesn't hear anything besides the normal ring of the telephone and the message of an answering machine (if there is one). If it's a telephone call, all extensions ring; you can then pick up the phone as though no device were in use. To receive an old-style manual fax you have to dial 23 on your telephone; with Easy-Connect Plus you don't — its operation is totally transparent. Two new versions are due out soon.

If you need a line-sharer between a fax and a modem, there is the FMX fax/modem switch. It's the same as Easy-Connect except that it shares a line only between a fax and a modem.

These devices are manufactured locally to an American design. Easy-Connect and FMX cost \$299 each. Easy-Connect Plus costs \$329. They are all available from Tamco (02) 905 1370 or National Communications (075) 945 128.

Message Stopper

If you have extensions on your line, this device is the essential minimum. It is especially useful if you have a fax machine with a built-in fax switch. A Message Stopper lets you pick up the phone on any extension and take control of the call.

Without a Message Stopper the phone may ring only a few times on the extensions and then continue ringing only on the fax machine. You must also pick up all calls on the fax machine, and calls on other extensions may hear fax tones during phone conversations.

With a Message Stopper installed, if you hear fax tones and put the phone down quickly enough, you can still receive the fax. And you don't hear any interfering fax tones while talking on another extension.

You connect the Message Stopper directly into any telephone plug and your fax into the Message Stopper. It is available from Tamco for \$39.

Protecting lines

While working on fax, computer, and printer help desks I have often encountered problems caused by power fluctuations through telephone and electricity lines. In Sydney, storms are the major cause of these problems. The recent bush-

Getting your telecommunications lines crossed? Suffering from power surges? Here are some devices that can help

fires also produced a lot of electrical damage outside the bushfire areas themselves.

Our electricity supply is generally reliable and stable; you should only encounter problems under abnormal circumstances. These

include having a building site next door or having your computer plugged into the same circuit as a washing machine, refrigerator or air conditioner. You should be careful about which electrical equipment you have plugged into a circuit. During a storm, disconnect your computer or fax from the telephone and power sockets. You must pull the plug out because lightning can jump the switch. This can be inconvenient, or impossible, but there are more expensive alternatives.

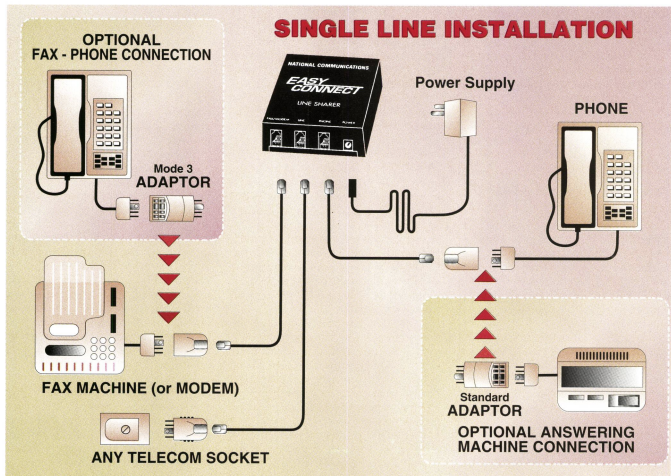
Telephone Safety Device (TSD)

The simplest device is the Telephone Safety Device. This Australian invention protects your computer or fax machine against lightning on telephone lines. Both buried and overhead telephone cables are prone to

induced voltages due to lightning. AC power lines which run parallel to telephone lines can also cause over-voltages on telephone lines — by falling across telephone cables, through induction, or earth potential differences.

The TSD is a telephone plug with a power cord leading from underneath it, and it has a second telephone plug on the other side. When you plug the power cord into the power socket, it grounds the telephone wire and moves lightning away from your equipment. It doesn't use any power itself. You plug your fax or modem into the other side.

The TSD is about to be replaced by the Fax Filter, which incorporates power line filtering as well as telephone line protection.



The Easy-Connect lets you share one line between up to four separate devices



The Faxguard combines power line filtering and telephone circuit protection

The TSD is available from Power House (07) 846 2644 for \$54.45. The Fax Filter is \$72.00.

Spike arrester/surge suppressor

A spike is a short, sharp power increase and may be massive if caused by lightning. A surge is a longer lasting power increase. To protect against these, you may need a spike arrester/surge suppressor. A small, simple, no-guarantee, single-use version is available from Dick Smith for around \$20. But be warned: you get what you pay for — the cheaper devices are probably not effective against lightning. This is the minimum protection you should use to protect against the severity of Sydney's summer storms.

Power line filters and power conditioners

Power line filters are combination surge/spike deflectors that are able to cope with, and survive, large variations in voltages than the simple devices described above. Power conditioners do the same and also guard against sags and electrical frequency changes.

A sag is a reduction in local voltage. In a city, sags are caused by large electrical switches in large transformers or large electrical motors such as those in air conditioners. Power line conditioners deliver a clean, continuous waveform to your computer or fax machine. They are better at defeating lightning because they don't just defeat the power surge but also its attendant power waveform disruptions.

Power line filters (sometimes called conditioners) cost \$200 or more, while reliable conditioners start at around \$1,000. Critec (02) 688 4528 has four Australian-made Enhanced Powerline Filters ranging in price from \$276 to \$450.

Uninterruptable power supply (UPS)

A UPS combines a line conditioner, spike arrester and surge suppressor with a battery so as to deliver continuous clean power even in a blackout. There are two types: the standby power supply, and the true on-line power supply.

A standby power supply has a few milliseconds delay before cutting in, but the delay isn't long enough to harm computer equipment. Most UPSs are of this type. True on-line power supplies don't have such a delay but are monstrously expensive and unnecessary for most people. The amount of time the battery gives you is dependent on how much you pay for the unit, which costs at least \$300 (\$500-\$700 for a reliable unit).

An alarm sounds if a blackout has occurred. The basic models may give you only ten minutes to shut down your computer system properly; more complex units are designed to provide enough power to keep your system going until your own generator can start.

The UPS is the best protection of all because you can leave your computer switched on all the time. Switching your computer on and off a lot causes the motherboard to

expand and contract a little, loosening the chips on the board. For this reason, some computers are designed to be left switched on all the time; in fact many companies never switch off their computers.

For any machine, a sudden complete loss of power could be very damaging. This is the minimum protection for New Zealand, judging by the high proportion of power-supply related calls I've received from that geologically unstable country.

Combination devices

Australia is a world leader in the production of power protection devices. Critec has two interesting devices that combine for a reasonable price many of the features we've discussed.

The Faxguard is recommended by Telecom. It combines power line filtering and telephone circuit protection. It is designed specifically to provide fax machines and modems with lightning and transient protection. It has one power socket and costs \$250.

The Compuguard is designed to give the same sort of protection for computers and modems. It has two power sockets and can protect both two-wire and four-wire (leased line) modems. It's available from Critec (02) 688 4528 and costs \$299.

If your equipment is plugged into a power board, this probably has an overload switch, light or button on it. This doesn't provide any protection from power line disturbances. It ensures you don't draw more than 240 volts from the GPO (General Purpose Outlet) it is plugged into. It's safe to plug a TV, stereo system and a computer into one power board, but don't plug in a refrigerator, washing machine, or anything with a large electrical motor or heating element.

You can work out what will fit using the formula $P=VI$, or watts=voltage X amps. A six-plug power board costs around \$17. More expensive versions that do provide some power protection are available for \$50 or more, but don't expect to pay less than \$200 for reliable power protection. ■

A teacher for Arthur

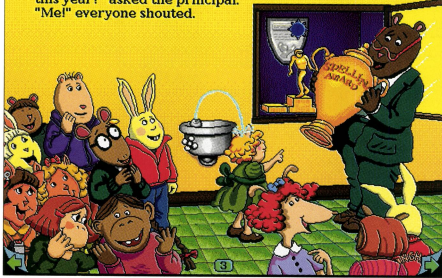
They'll eat it if you don't tell them it's health food

By Jan Wikström

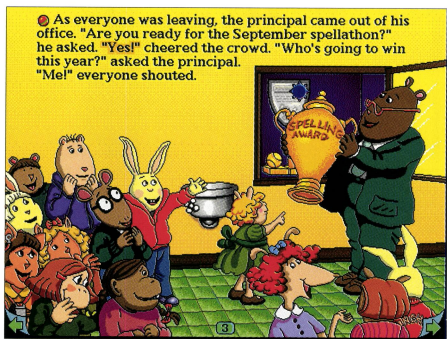
The first I've come across of Bröderbund's Living Books series is Arthur's Teacher Trouble. I hope plenty more will come along; this one was great fun to review.

First, its qualities as a multimedia item: instead of being merely a book in text form with some pictures and sounds added as illustrations, it's a full animation, which can be run as a passive film show or an interactive semi-game. It's a high-class cartoon, too, drawn with excellent style and flair by a highly professional team.

● As everyone was leaving, the principal came out of his office. "Are you ready for the September spellathon?" he asked. "Yes!" cheered the crowd. "Who's going to win this year?" asked the principal. "Me!" everyone shouted.



● As everyone was leaving, the principal came out of his office. "Are you ready for the September spellathon?" he asked. "Yes!" cheered the crowd. "Who's going to win this year?" asked the principal. "Me!" everyone shouted.



Page 3 of the book (above) is at the stage where the text is being read out (note the high-light) and the kids are cheering. The next scene (below) shows what happens when you click on the little footballer figure in the trophy cabinet; it has thrown the ball, which has bounced on the drinking fountain and set it off; the ball is just passing Arthur's spectacles

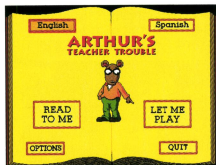
The interactive mode is obviously the main one; a great deal of work has gone into it. As each screen is displayed, a voice reads out the text, the words are highlighted as

they are read and the characters act out what is said, then there's a pause and the cursor appears. You can either change the page forward or backward at this stage, or play with the screen.

Clicking on items triggers sound and animated effects ranging from a brief noise to a 30-second sequence. There are dozens on each screen and they come in three categories: one-shots that go away and can't be repeated, repeats that play the same

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Even the option screen at the start is fully animated — Arthur, our hero, speaks instructions and points to the buttons in turn. When the explanation is finished, he dances to a jazzy little tune, then runs through the spiel again. Note that the book can be run in English and Spanish

sequence and repeats that change among several versions.

I find this a brilliant concept; it transforms a mere story into active entertainment. I had a hilarious time with this program — most of the effects are very comical — but then I'm just a simple-minded old man. To

get the reaction of today's sophisticated kids, I field-tested Arthur's Teacher Trouble on the two children of a friend of mine (boy 11, girl 13). They pronounced it "cool", but what really signifies is that I couldn't pry them away from the computer for two and a half hours. ... That's not bad for what is meant to be an educational program for third grade.

The key to this product is a very happy marriage between form and content. The content is basically simple: a class (third) gets a very strict teacher that makes them work, there's a spelling contest and one of the kids in this class wins. It's an old-fashioned story that teaches an old-fashioned moral (remember morals?): the winner gets there by working as hard as he can and dishonest, cocky and lazy kids lose out. The kids of the nice teachers that do fun things with their classes fail to learn enough to pass the test.

That, to coin a phrase, is the overt hidden message. The really hidden one is that if you play with this pro-

A teacher for Arthur

Price: \$89.95

Dataflow

Phone: (02) 310 2020

gram, you learn to spell a bunch of words, whether you realise it or not. The old-fashioned way, too. This is a fine example of the best kind of educational program: it's not labelled "educational", so the kids won't approach it in a negative frame of mind; they'll just have tons of fun and incidentally not only learn some spelling but also have a positive idea planted where it might do some good. Is it all perfect? Sorry, no. Arthur's Teacher Trouble is of course intended for the US market, which means that the pronunciation and spelling are American, which I think is unsuitable for Australia.

But then, I suppose Americanisation is inevitable, anyway, and the product is otherwise so terrific that I have to turn a blind eye.

Highly recommended. ■

Movie madness revisited

Back in the February issue, I said that I found it strange that Microsoft's Cinemania, a CD-ROM devoted to the cinema should be totally free of video clips.

Well, shucks, I should have remembered the old software vendor adage that you always have to hold something back for a good upgrade — and who should know that better than Microsoft?

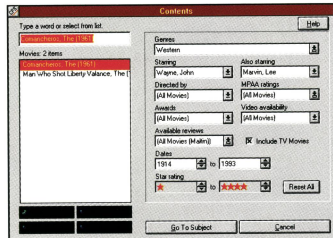
And here it is, Cinemania '94 with twenty film clips, and they aren't short ones, either — some run as much as two minutes. All kidding aside, this up-grade is a considerable step forward, not only because of the film clips — which I enjoyed, by the way; they include some of my all-time favourites, headed by the

rapids sequence from *African Queen*.

There are obviously more films and more stars, and critics Leonard Maltin (capsule reviews) and Roger Ebert (full reviews) have been joined by Pauline Kael (brief reviews).

More significantly still, the search and browse routines have been greatly enhanced and make it even easier to delve into really esoteric cinematic matters.

For example, when a popular offensive talkback host put up as a quiz question "who played the hero in *Randy Rides Alone*", it took me less than a minute to find out that this 1934 oat burner was one of the sins of John Wayne's youth. ■



The improved search screen in action. This is a lot quicker than searching through umpteen Wayne flicks by hand, looking for Lee Marvin

Movie madness revisited

Price: \$115

Microsoft Retailers

Pizzazz aplenty on the Daily PlanIt

Unfortunately, no joke is funny the ninety-third time, and as for korny ones . . .

By Jan Wikström

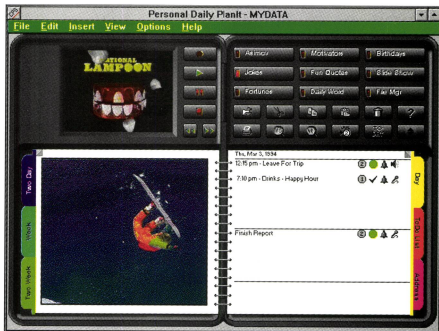
Daily PlanIt is a basic PIM (Personal Information Manager) or desk calendar/planner of the Lotus Organizer type. It comes in three variants with different decorations: Adrenaline, Planet Earth and Paradise.

Adrenaline has action sports images from Warren Miller Entertainment, Planet Earth has nature images from the National Wildlife Federation, and Paradise comes courtesy of Swimwear Illustrated, so you can guess what the pictures will be like. It's just my luck that I got the Adrenaline version to review . . .

While functionally simple, this program is full-on multimedia; it displays pictures and video clips and plays sounds, plus you can make voice annotations and even apply voice control courtesy of the bundled Dragon Talk>To Plus (see overleaf). If you're wondering how multimedia is involved in a desk organiser, the answer is of course as decorations.

Fantana di Trivia

Daily PlanIt displays a pretty picture in the calendar for each day, with different images in the month and year views. There is a daily quote, a daily scientific trivia item, a daily motivational saying, a daily fortune cookie and a daily "intriguing word" on the lines of those "expand your vocabulary" items in Reader's Digest. There is also a list of "famous people born today", which is terrific if you want to learn about obscure American sports and show business



The PlanIt user interface is familiar and comfortable, if you don't mind the mixed visual metaphor. The image in the little video screen at top left is the introduction to the joke of the day, which was playing when I captured this window.

personalities. Each of these comes with a video and sound introduction, about which I won't comment except to say that fortunately, they can be disabled.

In addition, there is a set of video clips called "personal assistants". These take the place of the alarm beeps or tunes played in other PIMs, so when a dentist appointment falls due, you can have a third-rate comedian crack a boys' school lavatory joke about it. Well, a few of them are

funny the first time, but no joke is funny the ninety-third time. The bad news is, you have to select one in order to set an alarm; the good news is, you can import video clips of your own and so have something more tasteful that won't set your teeth on edge every time it pops up.

The mouse that bulged

For all these frills, the user pays a substantial penalty: a complete installation takes 32Mb disk space. Yes, ▶

folks, it comes on a CD but it doesn't run off the CD; instead, a working setup is copied onto the hard disk. This comprises a set of images, video clips and sounds for one month and as a new month begins, you're expected to put in the CD and replace them with a fresh set. Again fortunately, you can choose to do without the more extravagant frills and have a bare-bones installation in 10.5Mb, but that's still not lightweight for a simple desk organiser.

But let's not be too harsh; my comments relating to taste are obviously based on my own taste, and of course there are many other equally valid sets of prejudices out there! Let's just say that the appeal of the product would have been broader if a few less juvenile options had been provided.

On strictly technical merits, it's a different story. As a PIM, Daily PlanIt works very well indeed and is most easy to use. As with Lotus Organizer, the interface is a familiar one that makes any novice feel comfortable and at home. All the necessary basic functions are there — address list, to-do list, appointments and meetings. In comparison with the market leader Organizer, PlanIt lacks the option to have multiple address lists and also lacks a telephone dialler, but on the other hand it has one advantage: when the time has gone past an alarm and it hasn't been cancelled, it pops up the next time you click on any button. Also, the buttons used to run the funny sayings can be programmed to launch other applications, which some users like.

Pocket VCR

The interface design suffers from a split personality. It is functionally similar to Lotus Organizer in that it's an open ring binder, but on the inside cover of the binder above the actual pages, there's a collection of switch buttons that belongs on one of those VCR recorders designed to look impressive rather than be easy to operate. The designers have gone to great lengths to make the buttons look 3-D realistic, with the result that it's hard to make out the text; black-on-black with "engraved"

white lettering blending in with "3D" highlights may look nifty but is a pain in the eye. By all means, let's mimic reality but let's not copy the worst design. And when did you last see a ring binder with a VCR inside?

As a program, I found Daily PlanIt solid and smooth; I came across no bugs (sorry, undocumented features) and had no difficulties of any kind.

Lissen, lse peak!

On the box, PlanIt claims to be the world's first planner with voice recognition, which is, let's be polite, a modified truth. The fact of the matter is that PlanIt comes bundled with Dragon Talk>To Plus version 1.4, which will of course endow any program with voice recognition and is available separately. So if you were that way inclined, you could perfectly well have applied voice control to any PIM while PlanIt was still but a gleam in Iguana's eye. The only limitation is that the voice control is restricted to operations that are activated by menus or shortcut keys.

Having got that off my chest, I have to say that I'm impressed by the functionality of Talk>To. The recognition training takes in a much wider range of level, speed and tone of voice than I had expected. A cold will still throw the program off, of course, and the complete set of commands for all relevant applications have to be recorded for each individual user.

Good as it is, Talk>To isn't completely flexible, so it can serve as a training aid for quick-tempered people: if a command fails to work, losing your temper and shouting can't make it work at all, at all... Similar-sounding commands can open some pitfalls, even in unexpected places. For example, the word "Layout" spoken in a bored tone activated the "Cut" command. The way to avoid this is simply to have no single-syllable commands.

Another thing: if you're in the habit of talking to yourself, voice control is not for you. I said "All right" and Talk>To jumped to the conclusion that I wanted to view my WinWord document in outline. Another training aid, maybe.

Clearing my throat activated the "select all" command, which somehow seems appropriate...

Speaking of training, I found the command training a breeze, as long as you try to speak in the tone you're likely to use later, in actual operation. There is absolutely no difficulty about setting up a new application program for voice control. The Browse function of Talk>To is straightforward and as long as the application program function is controllable by keystrokes (as all menus are), you can set up a voice control for it. The Browser comes with predefined controls for a number of popular applications, including WinWord.

There is an inherent problem with voice control: it takes us back to the DOS command line environment, in that you have to know exactly what the command is before you can issue it. Talk>To addresses this problem with a floating list of commands, clearly for use during the learning period. The list shows all currently active commands, so when you open or change focus to another application, its commands (if any) show up on the list.

I know the answer — what's the question?

OK, so Talk>To is a fine product that works like a charm — so what's it good for?

This is one of those many questions I approach in a doubting, not to say negative, frame of mind. Thinking about it beforehand, I couldn't help feeling that voice recognition is a bit of a gimmick and might at most be useful to people who are so severely handicapped that they can't use a keyboard or mouse.

Well, maybe I'm not totally converted, but I have to admit that after trying it out, I can quite see myself using voice commands with some applications. At least after I have learned not to talk to myself... ■

Daily PlanIt

Price: \$99.95

Media Vision

Phone: 1800 621 399

I hear and obey, oh master!

We often feel like telling the PC where to get off.

Here's our chance . . .

By David Hague

It can be hard to sort out what is really wanted in the PC market. Some of us say "wouldn't it be great if we could do . . ." and when we finally have this capability, the first reaction of others is to say "Aw . . . it's just a gimmick and won't last!" Technical snobbery is alive and well in the industry!

Let's hope that doesn't happen to the new Voice Assist application recently released by Creative Labs, well known for its SoundBlaster range of sound cards; Voice Assist is an elegant piece of software that has a large potential for many users.

Voice Assist is a Windows based application that takes advantage of a Sound Blaster compatible sound card in a PC. It comes with a microphone and allows the user to address the PC verbally with standard commands and have these obeyed with no further intervention from either the keyboard or the mouse.

Out of the box, Voice Assist comes supplied with two generic "voice type files" — typical male and female tonal registers. By using a simple training technique, Voice Assist is then taught to modify either of these to your own voice. This is

done by speaking commands into the microphone from a list of 32 generic Windows commands, such as *Next window*, *Minimize*, *Close* and *Task List*. This builds a personal file of voice commands.

This procedure takes about ten minutes, and once it's done, the basic commands of Windows itself can be spoken into the microphone rather than having to use the keyboard or mouse.

The second part is to train Voice Assist in the use of spoken commands for the standard Windows applets of Clock, Cardfile, Write, Calculator, Calendar, Media Player, Program Manager and File Manager. With these, all of the "actions" are pre-programmed, so once you have trained Voice Assist to your voice saying, for example, *File-Delete*, the command will be invoked and the action take place.

Voice training

When it comes to training Voice Assist to operate a full-scale application, such as a word processor, spreadsheet or database, this is more complex but still easy. Voice Assist automatically determines the com-

mand structures available and displays them in a table in much the same way as menus and tool bars are modified in popular programs. For example, in Word for Windows, a list of all the commands available under the File, Edit, View etc. menus is displayed and all that is necessary is to select a menu item and speak into the microphone the desired command. It is not necessary to actually use the same command verbally as the name of the menu item.

Instead of *Word Count*, for instance, you could just as well use the spoken word *Rhubarb*. The only problem with that is that you might forget the command if you don't use the standard phrase . . .

It is also not necessary to tell Voice Assist what to do with the command, because this is handled by the application.

For other functions, such as text selection, pushing buttons or a combination of any number of actions, a macro recorder is utilised to capture the key strokes, button clicks and so on.

These combinations are then linked to a specific spoken command, allowing complex combina- ➤

tions to be invoked by a single word. Creative Labs has not skimped in the capacities of Voice Assist. It is possible to have a maximum of 1,024 commands available in memory at any one time (992 application specific plus the 32 generic Windows commands) and the total number of commands that can be stored to a single person's voice file is more than 29,000! Application swapping is

automatically detected by Voice Assist, and the appropriate command set is loaded.

When using the macro recorder, unlike many programs that have problems with mouse clicks and drags due to screen coordinate limitations, Voice Assist uses a window-based coordinate system. This means that no matter where the window is on screen, the button, command etc.

is almost always in the same place relative to the *window*, thus giving more accuracy.

Speak to me

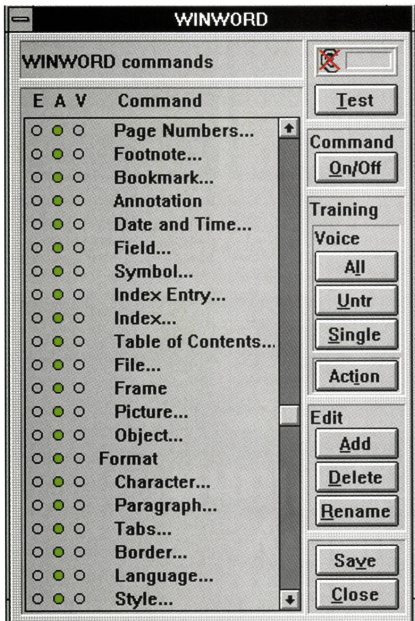
At first glance, I was sceptical about the uses and accuracy of Voice Assist, but even in extended testing, I found very few errors in voice interpretation. After a while, it actually felt "normal" to be issuing verbal commands to my word processor and alleviate the necessity to remove my hands from the keyboard whilst typing.

With a bit of imagination, many uses of Voice Assist can be thought of. Immediately springing to mind is in the use of Powerpoint or Freelance for graphics presentations. No longer would a mouse with a long cable be necessary to advance slides. Say *Next Slide* and away you go.

Likewise, the unfortunately complex structure of the standard Microsoft Windows backup system could be solved with one word, as could many other long winded tasks. Even the use of electronic mail and communicating to an on-line service such as CompuServe would be streamlined.

This is because of the use of macros, and of course there are non-voice utilities that create and operate macros to automate complex tasks and execute them at the click of a button.

Finally, for programmers wishing to add the capabilities of Voice Assist to their own Windows applications, Creative Labs also supplies the application program interface routines with Voice Assist. ■



The main training window of Voice Assist. Note the internal menu command structure of Word for Windows

Voice Assist

A Windows-based application that uses a SoundBlaster compatible card. It allows users to address the PC verbally with a microphone
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Product Description	LaserWave Futura 16	Sound Blaster 16	Media Vision Jazz 16	Sound Galaxy NX Pro 16
FM Synthesiser	OPL3	OPL3	OPL3	OPL3
Voices	20	20	20	20
MIDI (FM) Playback	Yes	Yes	No	Yes
Sampling Rate	4 - 48kHz	4 - 44.1 kHz	4 - 44.1 kHz	4 - 44.1 kHz
Concurrent playback/record	Yes	No	No	No
ADPCM compression	Yes	No	Yes	Yes
Microphone	Stereo	Mono	Mono	Stereo
Wave (samples) playback	Yes	No	No	No
Multi source recording	Yes	Yes	No	Yes
Digital Volume Controls	64 levels	64 levels	8 levels	64 levels
Input Attention	32 levels	32 levels	8 levels	32 levels
Double Shielding	Yes	No	No	No
CD Interface - Panasonic AT	Built in	Built in	Built in	Built in
- Sony AT	Built in	No	No	SG Adaptor
- Mitsumi AT	Built in	No	No	Yes
SCSI Interface option	Yes	No	No	Yes
Microphone Type	Any type	Dynamic Only	Dynamic Only	Any Type
Line Output	Yes	Optional	No	Optional
Wavetable Upgrade	Daughterboard	Available	No	Available
3D Surround Sound	Daughterboard	No	No	No
Windows Sound System inc	Yes	No	No	No

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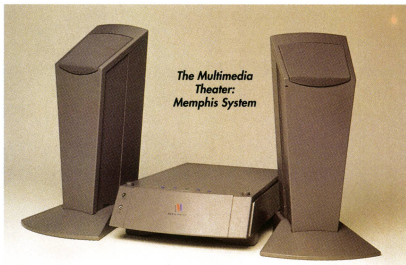
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Media Vision goes to Memphis

It looks a bit strange with its ice-cream-cone styling, but the performance is outstanding

By Jan Wikström



The integrated multimedia upgrade unit *Memphis* by Media Vision is set apart by more than its styling. Nearly as obvious as the styling is its surprisingly good sound quality — I say surprisingly because the speaker drivers are mere 60mm units (measured on the active cone). Seeing them, I expected tinny and distorted sound but I got excellent reproduction and more than adequate volume down to around 100 Hz; the plastic boxes are tuned base reflex enclosures.

There's more to it than the sound, too; the unit neatly integrates the amplifier, the speakers (which can be separated from the main box), the CD-ROM reader and all associated sockets and controls in a single desktop unit. There are only two external parts, not counting the microphone: the driver-cum-sound card and the power supply. The power supply could perfectly well have been built into the main box, but this would have entailed compliance with a number of high-voltage safety regulations in various countries; keeping it separate reduces the cost.

The sound card is a 16-bit stereo unit with 16-bit DMA, compatible with SoundBlaster, AdLib and ProAudio Spectrum 16 with the usual Yamaha 20-voice synthesiser chip with the usual FM sound. The card is compatible with Windows' General MIDI setup. It has MIDI and game ports and is a full duplex unit that allows simultaneous recording and playback.

The CD-ROM reader interface is full SCSI, which is unusual. With the aid of an optional connector bracket, and an enhanced software driver from Trantor Systems, additional SCSI devices, such as tape drive and scanner, can be connected.

The CD-ROM drive is a Sony two-speed unit of the caddyless type (takes the CDs directly in a drawer like a music unit).

I found the installation simple and quick, thanks to an excellent setup program that looks for vacant interrupts and sets the controller card accordingly. I did have a few difficulties with playing back MIDI files, but that was due to a shortage of RAM and could be tinkered away with SmartDrive tuning. Any machine

with 4Mb RAM or better should have no trouble at all.

There's the usual gallery of accessory software, including a multichannel mixer and a music CD player. I was happily surprised to find MidiSoft's Recording Session included; this is a great program for recording via the MIDI port or hand writing sheet music; you could compose and orchestrate a symphony on it without being able to play any instrument.

In addition, there are two CDs: one is the so-so *Compton's Interactive Encyclopedia* (see review in the February issue) and the very funny interactive multimedia book for kids *Arthur's Teacher Trouble* from Bröderbund (to be reviewed).

Memphis costs more than some other units, but it's clearly a high-quality, high-performance item. ■

Memphis

Price: \$1,495
Media Vision
Phone: (03) 520 1777

Good old DOS

By Jan Wikström

When you concentrate on Windows as much as I do, it's easy to forget that DOS has been developing, too. With on-line help, comments and examples now available for all commands, it's not nearly such a pain to use the old command line interface as it used to be. Sure, you still have to type commands, path names and file names, which is quite tedious enough, but at least you don't have to learn all the commands and switches beforehand.

All you need to remember is to type in the command you want followed by `?/` and read the quick help text that pops up. This, by the way, seems to be one of those felicitous ideas that are picked up immediately by programmers in general; I have come across a couple of third-party DOS utilities that behave in the same way. For DOS commands proper there is of course always HELP, which can be used alone or together with the mystery command and gives you most of the DOS manual on line.

There's more to it than just the help facility: many commands have new talents, controlled by new switches. Many of the new switches are really useful; `DIR /a-d /ar /ah`, for example, gives you a list of hidden and read-only files that is not clogged up with sub-directories.

So DOS isn't (quite) dead yet; if you take the time to snoop through the details, you may find the old dear more useful than you thought. Not that I would even consider recommending anyone to abandon Windows, but there are areas where DOS can still do things that remain beyond unadorned Windows. This applies especially to automated procedures in general and automated file handling in particular.

What brought all this on was of course the "Free choice with DOS 6" story in the last issue. The work on that story led me to explore the DOS boot-up menu facility further — it seems such a useful thing — and I found one nifty undocumented feature: if you press the **<Backspace>** key while in a submenu, you pop back to the main menu. So there's no need to waste one of the nine possible menu options on a Return choice.

I can remember when DOS menuing programs were all the rage (and, let's face it, the only way to set up a turnkey system for a non-expert end-user). Well, now DOS itself can do everything you need in this direction if you're a non-Windows person. I found the DOS 6 menu system powerful and easy to use, and recommend it warmly.



Send your questions to:
Jan Wikström, Help Screen
Australian PC World
88 Christie Street
St Leonards, NSW 2065.

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Animated QuickBasic

Q *I have tried to make a simple animation program in QB, but it didn't turn out well — the movements of the object were not very smooth. Is the enclosed sample the right approach to animation, or is there a better way, maybe using assembly language? Does this mean QB is hopeless when it comes to animation? I hope not!*

```
Sample:
SCREEN 9
FOR X=50 TO 100
  CIRCLE(X,50), 50, 3
  PAINT(X,50), 3
NEXT X
```

— Mark Chen

A As you have discovered, the standard graphic routines of QB aren't really fast enough to produce smooth animation. What you need is a library of special animation routines that you can link to. Alternatively, you can use assembly language to create your own, but that will take a lot of time and effort.

You'd be a lot better off getting Visual Basic for Windows, which has a standard control for running animations through the Video for Windows engine. This is not only very much easier to do, but it eliminates all your DOS-level problems of creating animation drivers for every display type on which your program might run. It also lets you run video clips and more complex animations than simple line figures — depending a little on what software you use to create the actual animation images.

Legal noise

Q *I bought a Pro AudioSpectrum 16 sound card a few days ago, but when I try to use it with almost any of my DOS-based applications, my system locks up. I tried using my 386-33 to play music, sound effects, and voice through the board, and the system halted immediately. Please help.*

— Geoff Sanders

A Your problem has two possible sources: one technical, one legal. First, the technical issues: The Pro AudioSpectrum 16 sound board causes conflicts when installed in many PCs because it takes up two DMA channels, two interrupts, and two blocks of I/O port addresses. (It uses a third interrupt and

another port address block if you want it to emulate the Roland MPU-401 MIDI interface.) If other components try to use any of these system resources simultaneously, the system could lock up. Use MSD.EXE, the freebie diagnostic program that comes with DOS, to see what interrupts are available. Also check out if you have other accessories that use interrupts. Usually, IRQ5 (reserved for second printer port) is available, as well as IRQ9, 10 and 11. See the answer to the next question, too.

Your problems may also be due, at least in part, to a glitch that caused a lawsuit between Creative Labs and Media Vision (the company that made your Pro AudioSpectrum). About two years ago Creative Labs gave software developers a kit intended to help them produce programs that work with the SoundBlaster sound. Media Vision later filed suit, claiming that the software in the kit intentionally crashed users' systems if the board was a SoundBlaster compatible, such as the Media Vision board. The lawsuit was settled out of court, so no-one knows what the parties agreed to. However, one would hope that later versions of the developers' kit do not have this problem. If you can't find a resource conflict in your PC, and SoundBlaster software crashes on your Media Vision board, call the software vendor and ask for a version that's known to work with your board.

Who am I?

Q *Six months ago, I bought a second-hand 486SX, which is maybe 18 months old. When I went to install a games card, I found out that the expansion slot had 60 sets of pins instead of the usual 50, has no partition and is 157mm long. However, Microsoft's diagnostic program MSD says the machine has an ISA/AT/Classic bus. I would like to add a multimedia kit, but I don't know what type of bus it has to fit.*

Also, do some motherboard manufacturers make use of a faster clock crystal, such as 33MHz, as a cheap way of speeding up a 25MHz CPU rather than upgrading the actual CPU speed to 33MHz?

— Darren Forsythe

A The vacant slot you describe is most likely a proprietary memory expansion slot — that is, it can only be used for memory add-in cards from the same manufacturer as the motherboard. However, your machine should also have at least three ordinary ISA slots, none occupied by other cards. Your best option is to try to replace two or more of these with a combination card, such as the typical current disk controller cards that contain serial and parallel ports as well as both hard disk and floppy disk controllers; this would free up a slot. If you could let us know exactly what expansion cards you have, we might be able to give more detailed advice. ➤

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As for the clock speed, there is no shortcut; if your chip is marked 25MHz, that's all the speed it can handle and if you speed up the system by fitting another crystal, it'll merely choke. You may also find that other chips on the board — typically the memory — are unable to keep up with 33MHz. The only reasonably trouble-free way to speed up your machine is to replace the complete motherboard.

Configuration conundrum

Q *My 486DX-50 has a hard drive, two floppy drives, a CD ROM drive, a sound card, VESA local bus video and a fax modem. With all this hardware, I can't keep track of the DMA and IRQ assignments. What is an easy way to list which DMA and IRQ settings are assigned to a particular board? Is there a standard list of which type of boards should have a particular setting?*

— Enzo Minotti

A Some software products claim to be able to sniff out which resources are claimed by which peripherals, but some, such as CD-ROM drives and fax modems can be hard to spot. MSD.EXE costs nothing because it comes with DOS and can at least give you a listing of what is supposed to be using the different interrupts. DMA channels are another matter and I don't know any utility that can check those. In your case, I suggest that you go through the existing settings for each peripheral and enter them into a table or spreadsheet. MSD (and the DOS 6 manual) will tell you which interrupts are occupied by standard peripherals, such as hard disk and keyboard; enter these as well, and you'll see where the gaps are.

Mixing memory

Q *I just bought 4Mb of RAM, which turns out to use 80ns chips. My PC came with 70ns chips. I have not had any trouble yet. Do you know of any problems that might be lurking over the horizon?*

— Simon Rodsky

A Return that memory if you can. You're taking a big chance using memory that's slower than what came with your PC. Since PC clone vendors have such low profit margins, they count every penny. They usually use a particular speed of memory chips because they couldn't get away with using cheaper, slower ones. The only exceptions are if there was a shortage of the cheaper chips at the time your system was built or the builder got a special deal on faster-than-needed chips.

In general, it's best to match the speed of the memory already in your system as closely as possible. Believe it or not, adding memory that's significantly faster than what came with your machine can also cause problems. This is because faster chips

don't just get data faster — they also take it away faster at the end of a memory cycle. If the motherboard is expecting a longer hold time, you could wind up with an unreliable system. My motherboard, for instance, will work with 80ns SIMMs but not with 60ns. That's fine with me; it saves me money.

Too Basic?

Q *When I run a QBasic program in DOS 5.0, the text editor screen appears with the name of the Basic program I am running. The command I use is QBasic /RUN C:\filename. Is there a way of running the Basic program without the annoying text editor screen appearing?*

— Thomas Jones

A QBasic, which is a DOS freebie, is an interpreter. This means that a master program has to run every time you run a QBasic program; this master program interprets the QBasic code because the computer can't read it directly. The interpreter is combined with the editor interface for convenience, as QBasic wasn't designed to look professional or replace commercial compilers.

The only way to get rid of the editor interface is to switch to a compiling programming language that creates directly executable code. I recommend QuickBasic (QBasic was cut down from this) or PowerBasic, which used to be Borland's Turbo Basic. Ask in any large software store.

Which way does the wind blow?

Q *All modern PCs seem to be ventilated by a blower that pulls air out of the case through the power supply. This blower causes air to enter through the various openings in the case — including the slots of the floppy and CD-ROM drives. This air brings with it all the dust and dirt in the surrounding air and eventually makes your disk drives filthy. Wouldn't it be simple to reverse the direction of the blower so that the case would be pressurised, and filter the incoming air with some sort of a quick-change filter? Is a modification kit for this purpose available?*

— John Brunfield

A The makers of some of the best CP/M computers once advertised positive ventilation through the floppy disk drives. However, when IBM came out with the original PC, it chose the ventilation scheme that's has become the default standard in all PCs today. I suspect IBM made its design decision because it was concerned that a filter could become clogged, causing the PC to overheat.

Many current PCs do have positive ventilation, but I've never seen one with a filter — which defeats the purpose. Reversing a PC's ventilation is anyway a simple matter; you only need to unscrew the fan inside the power supply and flip it over. This operation is helped by the fact that it has identical mounting flanges on both sides.

I don't know of any filter kits and I won't make any suggestions except that the area must be very big and there should be some safety device to prevent overheating.

Now you need it, now you don't

Q *I once read that the file WINA20.386 had to be in your hard drive's root directory if you wanted to run Windows, unless you specified another location where Windows could find it. Not being particularly observant, I only recently noticed that I had deleted this file from my disk and that no other copy was anywhere on the disk. Yet I have been running Windows just fine without it!*

To be on the safe side, I dug out my DOS 5.0 disks and expanded WINA20.386 back into my root directory. Does Windows 3.1 need this file or not?

— Ron Wickert

A WINA20.386 was designed to make DOS 5.0 (and later versions of DOS) work with Windows 3.0. It's a VxD (32-bit virtual device driver) that goes in and patches large chunks of Windows 3.0 to fix memory management and compatibility problems. WINA20.386 isn't necessary if you're running Windows 3.1, but some third-party memory managers and drivers still check for its presence. It's therefore a good idea to keep it in the root directory to avoid problems.

You must be quick to go faster

Q *I am interested in the chips Cyrix offers as upgrades or replacements for 386DX PCs. My 386DX-16 is slow by today's standards, but its 10Mb of RAM, excellent hard drive, and decent video card make it a good system. Will a Cyrix chip speed up my PC? Will it work with my maths co-processor? Or should I spend more money and buy a 486DX-25 or 486DX-33?*

— Patrick Buchanan

A Yes, Cyrix's upgrade chips for 386 PCs certainly make them run faster. But your motherboard is limited to 16MHz, so any CPU upgrade you install will be stuck at that speed, even though it's capable of replacing a 386-25. I recommend either upgrading

the motherboard to a 486-33 or 486-66 or buying a new system and finding another use for your old one. Today's systems have so much bang for the buck that your money may be better spent on new hardware than on upgrading what already works.

Power Windows

Q *I often use two or three Windows programs together. I have to start one program and then get Program Manager to the top and start the other one. Is there an easier way? And can I make programs like Notepad start in the same place every time?*

— Luke Gedon

A If you simply want a particular set of applications to open every time you start Windows, the answer is simple: Hold down the <Ctrl> key and drag their icons to Program Manager's StartUp program group. Each application in that group will automatically be launched when Windows starts.

If you want to start several programs together at odd times, just keep the <Shift> key down as you double-click on their icons; this launches the programs in the iconised state and File Manager remains on top (unless you have set it to "minimise on use").

Yet another method that is useful if you have several standardised sets of programs is to create Recorder macros. Make sure you use keystrokes and not mouse clicks when you record your macros, because it's more reliable.

Adding a second hard drive

Q *I am considering buying another hard drive for my system. The current drive is a 120Mb IDE Western Digital. I have found a used (two-month-old) 212Mb IDE Seagate for sale. Will the two work together? If so, how should they be configured?*

— Bob Lane

A It depends on the drives. Before the industry developed a standard for IDE, different vendors' drives would not always work together on the same cable. And many vendors, as they gradually brought their products into compliance with the standard, did so without changing model numbers. This makes it almost impossible to tell if two drives will work together without actually testing them. Your best bet is to get a money-back guarantee on the new drive, then try it out.

Before you buy, make sure the seller gives you the correct jumper settings for master/slave use. You also need to find out the settings for your old drive.

Brett Glass

Don't swap DoubleSpace

Q I just got DOS 6.0, and I plan to compress my hard disk using DoubleSpace. But I've heard that you should never create a permanent Windows swap file on a compressed drive. Is this true?

—Norma Cathcart

A Yes indeed. The easiest approach is to create the permanent swap file first, then exit Windows and run DoubleSpace. DoubleSpace will automatically detect the swap file and leave it on the uncompressed drive.

However, if you've already done the reverse, you'll have to untangle a few things. After you've created the swap file on a compressed drive, Windows will tell you that "the permanent swap file is corrupt" and ask if you want to delete it. Press Y and, when you're back in Windows, open *Control Panel* and select *386 Enhanced-Virtual Memory*. When Windows asks if you want to "Set corrupt file to zero length now?" click *Yes*.

Then click *Change*, and in the New Settings section of the Virtual Memory screen, select *None* from the Type list. Confirm your actions when Windows asks you to, then restart Windows.

To create a swap file without tears, do the following: Run DOS's disk defragmenter on the uncompressed drive to pull together as much free contiguous disk space as possible.

Load Windows, click your way back into the Virtual Memory screen, select the uncompressed drive for your permanent swap file, select *Permanent* from the Type list and click OK. When you reload Windows, you'll find that your swap file is in the right place.

If the uncompressed portion of your drive is too small for a worthwhile swap file, you need to allocate more space to it. Exit Windows and type **DESPACE** at the DOS prompt. Select the compressed drive to shrink, then choose *Drive-Change Size*. In the Change Size dialogue box, specify a *New Free Space* on the uncompressed drive that's big enough to accommodate a permanent swap file of the desired size, then click OK. Now run Windows and follow the procedure already described to create the swap file.

Trimming the driver list

Q When I run the Windows Setup utility and select Options—Change System Settings—Display, I see tonnes of video drivers that I don't need. I've gone through the WINDOWS\SYSTEM directory and deleted drivers that I recognise, but they still appear in Setup's Display list. How can I remove them from the list permanently?

—Alan Ayler

A You need to update the Display list information, typically found in the **SETUPINF** file in the WINDOWS\SYSTEM directory. After making a backup of the file, open SETUPINF with Windows Write or any text editor (the file may be too big for Notepad), locate the [display] section, and place a semicolon at the beginning of the line where a deleted driver is referenced (a semicolon at the beginning of a line tells Setup to ignore that line). There's a lot of clutter in this file, so search for the name as shown in the Display list, such as "Video 7 512K 640x480 256 colours driver". You'll find the name in quotes and preceded by something like "v7vga = 2v7vga.driv". Type a semicolon at the start of the line, repeat this for every deleted driver, and then save **SETUPINF** as text only. The next time you run Windows Setup, you won't see the deleted drivers listed. If you ever need them, just remove the semicolons from SETUPINF.

Even if you delete your drivers, don't delete their lines from SETUPINF. By commenting a line out with a semicolon, you can add it back to the list later by simply removing the semicolon. When you select a deleted driver in the Display list, Windows will prompt you for the disk containing the driver.

Properly, there should be no driver installed but the one you use. The exception is when your system has had another video card or cards. Be careful that you don't delete other drivers, such as a third-party comms driver; match the file names with the list in SETUPINF.

You may have a left-over video driver that is not listed in SETUPINF. If so, it will be from a third-party vendor, so look for other INF files in the WINDOWS\SYSTEM directory. These typically begin

with OEM and end with the INF extension, such as OEMPANA.INF. To remove the driver listings, you can edit the vendor's INF file using the steps outlined previously, or delete it.

Adjusting Task Manager's tile style

Q I use File Manager's drag-and-drop talents to add new icons to Program Manager or to open files in currently running programs, and I pop up the Task Manager and press the Tile button to arrange File Manager alongside the other windows. But this arrangement obscures much of the file list. Is there a way I can tile windows top to bottom instead of left to right?

— Bruce Benson

A Press <Ctrl>-<Esc> to display Task Manager and hold down <Shift> while clicking *Tile*. The windows will be arranged top to bottom.

Unfortunately, this trick won't work if you have more than three windows open. If you do, simply minimise the windows that aren't involved in your dragging task.

Wild cards and File Manager

Q I've found that manually deleting a lot of files when I'm in File Manager can take what seems like forever. Is there a way that I can speed up the process using DOS-like wild cards?

— Vinay Mehta

A Many File Manager commands — including Move, Copy, Delete, Rename, Search and Select Files from the File menu and View-By File Type — accept the wild-card characters ? and *. For instance, to copy all of the current directory's TXT files to drive B:, select *File-Copy* (or press <F8>), type *.TXT in the From box and B: in the To box and press <Enter>. You can even use multiple file names or extensions, separated by spaces or commas, although these won't work in the To boxes for the Copy, Move, and Rename commands.

The Select Files command is especially handy because it leaves the dialogue box open while you fiddle with parameters. Say you want to delete all WRI and TXT files in a directory.

Choose *File-Select Files*, type *.WRI *.TXT in the text box, and click *Select*. File Manager will select all of the WRI and TXT files in its active Directory pane. If you decide to deselect a specific file or file type, just type the file name (JONES.WRI) or file type (such

as *.TXT or REPORT.*) in the text box and click *Delete*.

When you're done, click *Close* and take the desired action, such as dragging the selected files to another folder or pressing the <Delete> key.

If you don't need to check selected files, simply select *File-Delete*, type *.WRI *.TXT, and click *OK*. To speed things up further, choose *Options-Confirmation*, and uncheck the File Manager prompts you don't want.

Unfortunately, File Manager dialogue boxes can't accept most DOS switches; for instance, you can't use -v to verify the accuracy of a copy.

But you can print unformatted ASCII text files quickly with the Copy command. Select the file, choose *File-Copy*, type the port name (such as LPT1) in the To box, and click *OK*. You may have to press the printer form-feed button in order to eject the page.

Nail down wandering icons

Q One thing I hate about Windows is its floating icons. When I double-click an icon, the mouse sometimes slips and the icon is nudged to the side. Can I fix my icons in place, and still be able to move them later if necessary?

— John Spano

A The simplest way to straighten up icons in Program Manager is to select *Window-Arrange Icons*. A more automatic approach: go to the Options menu and make sure *Auto Arrange* is checked. Either of these commands snaps the icons to a predefined spacing grid; you can change the grid under the Icons in the Desktop section of the Control Panel.

Taming minimised icons on the desktop is trickier. One method is to slow down the double-click speed, allowing Windows to ignore icon movement between the first and second click.

To set the double-click speed, launch Control Panel, double-click *Mouse*, locate the Double Click Speed scroll bar, move the scroll box all the way to the "Slow" side and click *OK*.

If this doesn't do it, try adjusting WIN.INI to extend the distance the cursor can move between clicks and still have them count as a double-click. In Program Manager select *File-Run*, type WIN.INI, and press <Enter>. Locate the DoubleClickHeight= and DoubleClickWidth= statements inside the [windows] section, and increase their values to 20 or 30 (they'll probably both be set at 4). If these lines aren't present, type them in. Save the file and restart Windows. ■

Scott Dunn

Correct most Windows instability with just a single command

By Brian Livingstone

For years, Windows users have been mystified by strange error messages. For no apparent reason, you may be confronted with a dialogue box such as, "Out of memory", "This application has violated system integrity and will be closed", or "Application error". A quick check of the Help About box in any Windows applet reveals that you have plenty of memory and Free System Resources. Yet these nonsensical messages appear, after which Windows behaves erratically and must be restarted.

I've finally found the cause of most of these messages. Best of all, you can correct the problem by inserting a single command into the (386Enh) section of your SYSTEM.INI file:

MaxBPs=768

"MaxBPs" stands for Maximum Break Points. This obscure setting controls what is probably the most important cause of Windows instability.

The Windows Resource Kit states, "This entry specifies the maximum number of breakpoints . . . that can be used by the VMM (virtual memory manager). You may need to increase this value if you are using a third-party virtual device driver". It also says that the default value is 200. But I believe there is more to this setting than meets the eye.

Breakpoints, in this context, are small chunks of memory (approximately 10 bytes each) that Windows uses to save the state of a Virtual Machine (VM). All Windows applications run in a single VM, and each DOS sessions that is launched from Windows runs in another VM. Windows applications may also spawn VMs for one reason or another — to communicate with real-mode devices, for example.

Ordinarily, Windows allocates 4K of RAM for breakpoints. Then, the default value of 200 is rounded upward to fill the entire 4K. This means that 358 breakpoints are actually set up. In the process of running its various modules on start-up, Windows itself uses about 200 of these. That leaves about 158 for your own operations.

A breakpoint is consumed — and never restored — each time Windows crosses a virtual machine boundary. Starting a DOS session consumes a breakpoint (as does exiting the session). Checking your swap file settings in Control Panel consumes one if a real-mode disk read is required.

Whoever created the MaxBPs algorithm for the beta version of Windows 3.1 back in 1991 must have thought that 158 breakpoints would be enough for anybody.

But considering all the things that Windows does, breakpoints get used up fairly quickly in the course of a day.

There is one obscure reference to this setting in the README.WRI file of Windows for Workgroups 3.11, to the effect that the line MaxBPs=400 added to the [386Enh] section of SYSTEM.INI is helpful if the system hangs while compiling with Microsoft C/C++ version 7.0. That's as far as it goes, though; there is no further explanation.

Any MaxBPs setting of 359 to 768 gives you about 410 more breakpoints, at a cost of 4K of RAM (well worth it). Settings of 769 to 1,177 give you another 410 or so.

This doesn't work with the current version (7.03) of Quarterdeck's memory manager QEMM; according to Quarterdeck, this is because when a memory manager can free up more than 576K of conventional memory, Windows grabs some of the first 64K for its own mysterious purposes, which has the effect of limiting the number of breakpoints possible. Quarterdeck recommends trying MaxBPs=500.

Non-Quarterdeck users who have tried out my recommendation of MaxBPs=768 have reported substantial benefits. One user reports clearing up problems with running the AfterDark screen saver in Randomiser mode on a 4Mb machine and likewise the Intermission screen saver. More importantly, the same user reports that failures to use the TextArt module in WordPerfect 6.0 for Windows have been cured.

Another user reports curing several problems, including the absolute inability to print from the Day Planner utility of Norton Desktop for Windows.

Finally, one user is very critical of Microsoft. That site has for years had memory problems on 16 and 32Mb systems, which Microsoft has blamed on insufficient memory or applications that don't adhere properly to the Windows API (Application Programming Interface). MaxBPs=768 cured the problems instantly and permanently.

Let us know what results you get! ■



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Faxes that know voice from data

Q I have a fax modem on the same line as my telephone. Is there a way to make the fax modem distinguish between a fax and a voice call? Are there any products that can do this when my modem is off?

— Charles Forelle

A Determining the nature of an incoming call is something only sophisticated fax modems can do. For instance, there are three internal fax modems in Intel's SatisFaxtion line that can make the distinction: the 2,400bit/sec 200, the 9,600bit/sec 350 and the 14,400bit/sec 400. However, these fax modems support only the DCA/Intel Communicating Applications Specification (CAS), a method for communicating with fax software, instead of the industry-standard Service Class 1 or 2. So you'll have to make sure your fax software supports CAS.

More interesting still is NetComm's combination of a voice modem (you can pick one of a range, depending on how much performance you need) and the Cooee software package. This dynamic duo makes up the Electronic Secretary, which determines what an incoming call is and either acts as a telephone answering machine or receives a fax or data transmission.

Watch out for other types of gadgets that claim they can determine the nature of incoming calls. Neither communications software nor black-box type devices that hook up between the fax and the phone jack can reliably tell the difference between bits and breath. You need a voice modem as well as the right software.

Shuttling WordPerfect files by modem

Q I want to modem WordPerfect files to another computer. Can I send the files as they are, or must I convert them to text files first? Will any of the protocols like Xmodem or Ymodem send the files without the conversion?

— Hal Tritz

A First, the quick answer to your question: you don't have to do anything to the files before sending them with an error-checking protocol like Xmodem, assuming that the PC user on the other end has the same word processor as you to read the files with.

You may need to strip a word processing document of its formatting before you send it, but that's not a communication requirement but a matter of what the end-user will do with the file. If you want to upload the document into an e-mail message or if you're going to post the document as a text file, on an on-line service or BBS, you also need a plain text file, but again that's a matter of end use.

Your word processor either provides a utility for removing formatting characters (converting it to ASCII) or includes an option that allows you to save the file in a

"text only" or "text only with line breaks" format. If you're uploading text to an e-mail message, you'll want to use the latter. Generally speaking, binary file transfer using a protocol like Xmodem or Ymodem is better than plain text transfer because it provides error detection.

Take note: if you're using a Windows word processor, make sure the lines in the document are short enough to fit comfortably when you upload to an e-mail message. Documents created in a small font often translate to lines of absurd length when converted to ASCII.

What good is 14,400bit/sec?

Q I recently bought a 14,400bit/sec fax modem to save money on long-distance calls. I was disappointed to see that it usually transmits faxes at 9,600bit/sec or 4,800 bit/sec, thanks to the paucity of other 14,400bit/sec fax devices out there. Did I waste my money?

— Albert Zhou

A Not at all. These days, the price difference between a 9,600bit/sec and a 14,400bit/sec modem isn't that great. And even if you connect at 14,400bit/sec to just a handful of fax devices, the long-distance savings can pay for the extra speed in just a few months because you'll cut your costs by a third with each transmission. What's more, fax modem technology has been springing ahead so fast that slower models will seem like dinosaurs in another year.

Navigating CompuServe MHS hubs

Q Our firm recently purchased the Network 2.0 e-mail system with a Message Handling Service (MHS) Hub. I would like to send e-mail to an Internet address using the CompuServe MHS Hub. How should I address it?

— Rolf Kolawski

A CompuServe's Mail Hub allows users of connected company LANs to send e-mail to other company LANs, to CompuServe users, and to the many message services connected to it, including Internet, AT&T Mail, MCI Mail, and SprintMail.

To route a message to an Internet address via the CompuServe MHS Hub, for example, you would enter MAIL@CSE (INTERNET:

username@subdomain.domain), where

username@subdomain.domain is the recipient's Internet address, as in "larryg@att.com". Internet users sending messages via the CompuServe MHS Hub to a company LAN would use username@workgroup.MHS.COMPUERVE.COM. For more information about using the MHS Hub, type GO MHS at any CompuServe prompt.

— Judy Heim

A mouse of a different colour

Q I'm running out of slots and would like to get rid of my Microsoft bus mouse card. Can I convert my bus mouse into a serial mouse? Is there any disadvantage to a serial mouse?

— Gloria Rodriguez

A According to Microsoft, you're out of luck. The company doesn't sell a bus-to-serial mouse converter and knows of no third party that does, so you'll have to buy a new mouse if you want to go serial. To answer your second question, there's no difference in performance between a bus mouse and a serial mouse — you won't even have to change your software installation. The only drawback is that you lose a serial port instead of a slot.

Your new mouse doesn't have to be Microsoft, either, so long as it's compatible (which nearly all are, these days). Here's your chance to get a mouse that really suits your taste, not to mention your hand; modern meeces come in all shapes and sizes.

Seven steps to recover C:

Q I'm faxing you this because I'm desperate. When I turned on my PC this morning, it wouldn't boot. So I booted from a floppy, and when I tried to switch to drive C:, I got the message "Invalid drive specification". I haven't added any cards or changed anything, and I don't have a recent backup. Is this the end of my hard disk?

— Natalie Balfour

A Probably not. Everyone encounters a disappearing hard drive at some time; unless you've had problems with the drive before and ignored them, you have every chance of getting your drive and data back intact. Take a deep breath, try the following steps, and remember the cardinal rule: as soon as you get access to the drive, back up all data immediately, if you haven't been conscientious and done it before. I've listed the easiest fixes for the most likely problems first.

1) Unless you have a SCSI drive or an auto-configuring drive that bypasses your BIOS, such as a Hardcard, try this. Bring up your system setup routine. Usually, BIOS will display a message during the boot process that tells you how. If yours doesn't, consult your manual. If you have no manual and can't get to the manufacturer's tech support, try **<Ctrl>+<Alt>+<Insert>**, **<Ctrl>+<Alt>+S**, **<Ctrl>+<Alt>+<Esc>**, or simply **<Esc>** or **<Delete>** after your system does its memory check.

As you work through the setup procedure, look ►

for *Fixed disk 1* or a similar entry. If you see the word *None* or something equally negative, then you've lost your drive configuration. How? A little battery in the system, which powers a tiny amount of RAM that holds the configuration data, is dying. Change *None* to the correct drive type, save the configuration and reboot.

If you don't know the drive type and have no manual, things could get a little sticky. For a full description of how to re-enter setup data and change batteries, see "Password: Help!" in the March issue.

2) If you have a SCSI drive, I have a question: Installed any new software lately? Some SCSI devices require a line in your CONFIG.SYS file, and software installation routines are notorious for scrambling CONFIG.SYS.

If you don't know whether your drive needs a CONFIG.SYS DEVICE statement or what that statement should be if you need one, check the manual or call the manufacturer. Write that statement down when you get it, then boot from a floppy and swap in a disk containing EDIT.EXE, the DOS text editor. Use the editor to create a new CONFIG.SYS file containing the device statement, save the file, and reboot from the floppy. If this works, open the CONFIG.SYS in the hard disk root directory and look for the statement. If it's not there, or if it's jammed on a line with something else, enter the correct DEVICE statement on its own line immediately after any memory managers you may have (such as HIMEM.SYS). Reboot, and remember: always check CONFIG.SYS after you install software and keep an unaltered backup copy (mine's CONFIG.BAK).

3) Leave your system on for an hour. Then reboot and see if it works. If your machine was cold overnight, components inside the drive may have contracted enough so that the read/write heads can't find the boot sector on your drive. As the drive warms up, the components realign themselves into the position they were in when they wrote the data, and everything works.

Unless the climate change was radical, temperature sensitivity often signals that your drive is drifting out of alignment. Back up your data, then run a non-destructive, low-level format program such as Calibrate from the Norton Utilities or Spinrite from Gibson Research, which can restore data on the drive, including sector information, to its rightful place. If you run a low-level format and still have problems, get a new drive.

4) Try running a hard disk diagnostic program, such as Disk Doctor from the Norton Utilities, from drive A:. Norton and many other utilities can work with a drive that DOS fails to "see". If the utility detects your hard drive, it may give you an error message and recommended action. If no error messages appear, or you get one stating that drive C: isn't bootable, use a utility to make it bootable. Reboot, and if the drive comes to life, back it up

immediately and run a non-destructive low-level format.

5) Turn off your PC, open it up, and reseal all of the cables — that is, unplug them and plug them in again. Reseating ensures that nothing has come loose and scrapes away any corrosion that may have accumulated on the contacts. If the data cable (a flat, grey ribbon cable) plugs into the motherboard, remember to reseat that connector, too. If your drive plugs into a card, reseat the card as well, all the way into the slot. Finally, reseat the power cable, a three-conductor cable running from the power supply to the drive, where it ends in a white plug. The plug should be hard to remove, so make sure you pull on the plug and not the cable, and push hard to plug it all the way back into the drive. Turn on your machine and see if it works. If it doesn't, turn off your PC and leave the cover off for the next step.

6) Turn your PC on again. Put your ear to the drive. Does it make any noise? Usually, you can hear a rising whirr or whine as the drive spins up. If you hear nothing, and you have an old drive, you could be a victim of stiction (short for static friction), where the heads actually stick to the platter.

There are two ways to cure stiction. First, turn off your PC, disconnect the cables and remove the drive. Hold the drive firmly in your hand, with the broad, flat, smooth side of the drive resting against your palm. To unstick the heads, twist the entire drive hard and fast in your hand a couple of times about the axis of the disk. Plug the drive back in, and turn your system on. If the drive still won't spin, turn off the system, disconnect the cables again, and try twisting the drive spindle — if you can get hold of it. Often you'll find it under the drive's circuit board, which is usually safe to remove, as long as you're careful not to put a strain on the short ribbon cable between the circuit board and the drive. The spindle may be slotted for a screwdriver, but most likely you'll have to grab it and twist with a pair of pliers. If you reconnect the drive and it works, back up your data immediately, and buy a replacement drive.

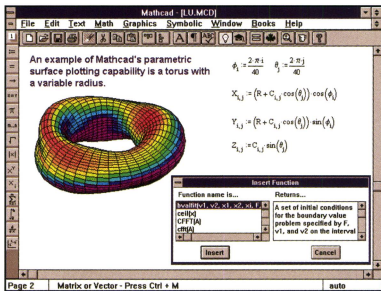
7) Even if you run a diagnostic and can't detect any controller errors, try another interface card — but make sure you try the right one. You should be able to connect any IDE hard disk to any IDE interface board; the same goes for SCSI drives and cards. With ESDI, ST506, and XT-type drives, however, you may need to do some fancy configuring to get card and drive to talk to each other. Contact the drive and card manufacturers for help — or give your drive the heave-ho and buy a new IDE drive, because if it's that old, the performance will be poor by today's standards.

If none of these strategies works and the data on that dead drive is vital, it's time to bring in the professionals. Some argue that you should do this before attempting a low-level format, since low-level ▶

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	Postcode
Phone	Fax

formatting with a damaged or misaligned head could trash everything. That's certainly possible, which is why I emphasise that you must back up as soon as you get the drive running. If the drive then goes belly up, you can always buy another drive and restore the data to it, which is cheaper than sending the drive to a data recovery service. But when all else fails, those services really can help, especially if they have access to a clean room, where they can open up and physically repair the drive safely, at least to the point at which data can be recovered.

However, let me repeat again: if you back up your data the way you're supposed to, you won't need to pay big bucks for a recovery service.

Leave it on or turn it off?

Q I've heard that turning a computer on and off wears out components and that you should leave your PC on all the time. But I've also heard that continual spinning wears out the hard drive sooner and you should turn off your PC if you're not going to use it for several hours. Whom should I listen to?

— Gerald Lord

A The more times you turn a system on, the quicker you'll "wear it out", though not quite for the reason you give. When you turn a system off, it eventually reaches room temperature. Turn it on, and it heats up — a physical change that puts a strain on connections and components. Over time, the expansion and contraction can cause broken solder joints and even short circuits. The power supply, which heats up fastest, gets the worst of it.

As for the hard disk, while you may wear out the bearings a little sooner by leaving it spinning, warming up the drive when you turn on the system probably does more damage.

All this would seem to argue that you should never turn off your system, but you need to consider other factors than just wear and tear. Although turning your system off and on will wear it out sooner by some indeterminate amount, chances are you'll upgrade to another system well before your current one dies. Meanwhile, save on your electric bill. A recent study indicates that turning a system off at the end of the workday reduces its energy consumption by 64 per cent — about \$100 in savings per year.

So here's my advice. If you're going to be away from your desk for more than a couple of hours, turn your PC off. Otherwise, turn it on in the morning and turn it off at the end of your workday. What happens during the workday becomes less important if you have a "green" PC, which switches off its display and drive and goes to sleep after a preset delay, but it will probably still pay you to switch off during the night.

Serial ports: four equals two

Q My PC has two built-in serial ports. I needed to hook up a mouse, a modem, and a serial printer, so I bought an expansion card that added a third serial port. I put the modem on COM 1, the printer on COM 2, and the mouse on COM 3. Now when I use the modem, my mouse won't work. What's wrong?

— Colleen Mulvaney

A So you thought that just because DOS 3.3 and later versions support COM 1, 2, 3, and 4, you had four serial ports to play with? Ha! Make that more like two-and-a-half and blame IBM for the built-in roadblocks of the original PC design.

Assuming you've configured the serial port on the expansion card as COM 3, you've run across a real gotcha — an interrupt request (IRQ) conflict inherent in the architecture of all AT-compatible machines, which includes virtually all 286, 386, and 486 systems except Micro Channel models. Every port (and nearly every expansion card) needs its own IRQ line, which issues a special instruction (called interrupt) to the CPU that says, in effect, "Hold everything; I need service now!" But in AT-compatible systems, COM 1 shares IRQ 4 with COM 3, while COM 2 shares IRQ 3 with COM 4. Why? Presumably because there are not many IRQ lines to go around — 16 in all, with six to eight of them already spoken for in most standard system configurations. (Micro Channel machines offer an advantage here because, theoretically, you can use up to eight serial ports without any conflict.)

With the shared-IRQ scheme, you can still hook four devices to four serial ports — as long as you don't use COM 1 and COM 3 or COM 2 and COM 4 at the same time. (And as long as they're not on separate expansion cards — you can't put two serial port cards on, say, COM 1 and COM 3, since cards use their IRQ lines any time they want to.) The quick fix for your problem, then, is to configure the mouse for COM 2 and the printer for COM 3. You won't be able to print while you're on-line, but at least the mouse will work.

Alternatively, some serial port cards and even some PCs let you reassign COM port IRQ lines. If your card or PC lets you do this, make sure you switch COM 3 to an IRQ not used by the system or another card. If you have either Windows 3.1 or DOS 6.0, there's an easy way to scope out your PC's IRQ status. At the DOS prompt, change to your Windows or DOS directory, and type **MSD** to load the Microsoft Diagnostics. Type **Q** at the opening menu, and you'll see a list describing the most common use for each IRQ, along with the actual status of all 16 IRQ lines. Any line with a "No" or a blank in the "Status Detected" column is free for the asking.

Eric Knorr

Sound off with Freelance

Q Since adding a sound board to my PC, I've used Freelance Graphics for Windows 2.0 to produce screen shows with sound effects that are cued to particular slides. Now I'd like to add sounds that I can play manually by clicking on clip art such as a computer, a clock, and a group of people that I've included in different slides.

—Margie Rosenthal

A Playing sound files by clicking on graphic objects is great for interactive presentations. The basic procedure is a two-stage one: first you set up a graphic as a Freelance screen show button, then you assign a sound file to it. After that, you can play the sound file just by clicking on the graphic.

To explain the steps required, we'll use a clip art symbol and a WAV sound file that come with Freelance, but you can also apply this technique to other graphics you create or import, as well as WAV sound files from other sources. In this example, we'll take a graphic of a telephone and make it ring when you click it. Here's how.

1. Click the Symbol icon (the light bulb) in the Toolbox to open the Add Symbol to Page dialogue box. Choose a symbol category by scrolling to and highlighting *communic.sym*. Choose a symbol by highlighting the telephone symbol displayed below the title and click OK. By default, Freelance inserts the symbol on the left side of the slide, but you can easily move or resize it.

2. With the telephone still selected (indicated by the highlight boxes that surround it), choose *View-Screen Show>Create-Edit Button*.

3. In the dialogue box that appears, you can accept or replace the default entry for the Screen show button name. In this case, you might replace the default with "Telephone" to help distinguish it from other buttons on the same slide. Next click *Play a multimedia object* for the Specify button behaviour option, and click the *Browse Media* button.

4. In the Lotus Media Manager dialogue box that appears next, click the Files-Types list box and choose WAV Files. These files should be in the \LOTUSAPP\MULTIMED directory; if the files in this directory aren't displayed, use the Directories path box to change to that directory. Highlight the file PHONE.WAV, and click OK twice to return to the slide.

That's all there is to it. To test the sound effect that you've added, click the Screen Show (movie camera) icon in the button bar to start the screen ▶

show. When the slide with the telephone symbol is displayed, click on it to make it ring. To advance to the next slide or return to the slide window, just click somewhere off the symbol.

You can use any Freeline symbol as a screen show button. You can associate sounds with graphic objects created with Freeline's drawing tools, with a chart or table, or with imported graphic files, such as scanned image files. Just select the object first, then follow the steps described above.

Last but not least, once you've set up a graphic object as a button, you can reconfigure it by clicking the right mouse button and selecting *Button Attributes* from the pop-up menu to reopen the Create-Edit Screen Show Button dialog box. You could, for example, assign different sounds to the symbol, or specify the number of times it should sound each time you click on the symbol.

Easier drop caps with PageMaker

Q The automatic drop-cap feature in PageMaker 5.0 is a welcome improvement over the old method of manually formatting a big letter at the beginning of a paragraph. But after applying it, I still have problems if I want to make other changes to the same paragraph. For example, if I edit the text or change the column width, the text no longer wraps properly and I have to remove the drop cap and start over. What gives?

-Bill Alexander

A Although PageMaker's Drop cap addition certainly makes it faster to format large capital letters, it still isn't foolproof, as you've discovered. The reason you're having problems is that the Drop cap addition inserts tabs to create the space around the big letter and adds line breaks to wrap the text around it; any modifications you make to the paragraph afterward can foul up the drop cap formatting. That's why the basic rule of thumb for using this addition without trouble is, don't mess with it after you've applied it.

However, you can avoid most potential pitfalls if you follow a few useful pointers when using this otherwise handy typographical effect. (Note: If you didn't install the Drop cap addition when you installed PageMaker, run Aldus Setup, select *Additions*, click *Setup*, and select *Drop cap*.)

First, don't use the Drop cap addition until your publication is almost final. It's best to finish adjustments to the layout, such as column width and alignment, and changes to the text, including editing and spell-checking, before adding a drop cap. If you want the drop cap to use a different typeface or type style than the rest of the paragraph, set those specs before you use the Drop cap tool.

To add a drop cap to a paragraph, insert the text cursor in the paragraph and select *Utilities-Aldus Additions-Drop cap* to open the Drop cap dialog box. The default size for a drop cap is three lines, but you can change the size if you wish. Finally, click *Apply* and then *OK*, or click *Prev* or *Next* to apply additional drop caps.

If you must make changes to a paragraph after applying a drop cap, the safest method is to use the Drop cap utility to remove the existing drop cap, then make the necessary changes and finally reapply the drop cap effect. To remove a drop cap, insert the text tool cursor into the paragraph, select *Utilities-Aldus Additions-Drop cap*, then click *Remove* and *OK*.

A final tip: you can apply a drop cap only to text that uses either Proportional or Baseline leading. If you try to apply it to text that uses Top of caps leading, you'll get an error message. To change a style's leading method, select *Type-Define styles*, highlight the style name and press **<Alt>+EPS** to open the Spacing attributes dialog box. Click on the button for the leading method you want, then press **<Shift>+<Enter>** to close all the dialog boxes and return to your page.

PowerPoint handouts by the numbers

Q I'm combining two existing PowerPoint 3.0 presentations, each containing 30 slides, into a single slide show. To accompany the combined show, I want to print a single set of handouts, three slides per page, with consecutive page numbers. While PowerPoint correctly prints the first set of handouts with page numbers 1 to 10, it assigns the same page numbers to the second set of handouts as well. How can I get the second set to start on page 11?

-May Sui

A All you need to do is change the starting slide number in the second presentation. PowerPoint will then change the page numbers on the handouts accordingly. In this case, you'll want the second presentation to begin with slide number 31.

To do this, open the second presentation and select *File-Slide Setup* to open the Slide Setup dialog box. In the Number Slide From box (which displays "1" by default), type 31 and then click *OK*.

You can now print the second set of handouts using the same print options you applied to the first presentation. PowerPoint will automatically calculate and print the consecutive numbers needed for the handout pages, beginning with page 11. To combine more than two presentations, repeat the same procedure and change the slide number default as necessary for each additional presentation you want to include.

Richard Jantz

Getting dBase ready for work

Q Every time I load dBase III Plus, I go through the same steps to set up my work areas — I change a few settings, open my data files with their indices and so on. This is really getting tiresome. Is there some way to automate these tasks so that dBase performs them every time I start it?

— Don Leonardi

A You can create a simple program that does everything you normally do when you start dBase, and then customise dBase so that it runs this program every time it's loaded. And no, you don't have to be a programmer to do it. The following instructions work for dBase III Plus and dBase IV.

To create the program, simply enter the commands you usually run when you load dBase in an ASCII text file called STARTUP.PRG; to use the editor that comes with dBase, use the command **MODIFY COMM STARTUP**. If you use the Assistant instead of typing in the commands yourself, get everything in place as you usually do, then press **<Esc>** to go to the dot prompt and enter **LIST HISTORY TO PRINT**. This will print a copy of the commands you need in your STARTUP file, which you can read as you type them in. Check listing below for a sample start-up program that will give you the general idea.

After you've created STARTUP.PRG, you must change another ASCII text file, CONFIG.DB, to tell dBase to execute this program every time it loads. By default, CONFIG.DB — which should already be in your dBase directory — has just two lines: **STATUS=ON** and **COMMAND=ASSIST**. Change the **COMMAND** line to **COMMAND=DO STARTUP** and save the file. The next time you start dBase, the

```
SET CARRY ON
USE C:PROJECTS INDEX PROJNUM
SELECT 2
USE C:STAFF INDEX LASTNAME
SELECT 1
APPEND
```

Set up dBase every time you load it with a start-up program such as this one

program will run your commands automatically. By the way, if the only commands that you run after loading dBase are **SET** commands, you don't need to bother with creating a PRG

file. Adding the line **CARRY=ON**, for example, to **CONFIG.DB** will have the same effect as putting **SET CARRY ON** in your **STARTUP.PRG** file.

Picking up the thread

Q How can I resume the print job after a printer jam without skipping any records?

— George McLellan

A Once you've fixed your printer, use the **FIND** command to get to the last record printed. For instance, if the data file is indexed by last name, and the last record printed is for John Jasper, enter **FIND "Jasper"**. Then enter **SKIP** to get to the next record — the first one that wasn't printed — and enter **LABEL FORM formname TO PRINT NEXT n**, where *formname* is the name of your form and *n* is a number greater than the number of records left to be printed. You don't have to know exactly how many records are left to print — anything bigger than the highest possible number will do. That's all! Your report will start again where it left off.

Varying font sizes in Paradox

Q I'm using Paradox 4.0 to track registration information for conventions and print badges for attendees. Is there a way to make Paradox change the point sizes for each of the fields so that one can be 32 points and the others 18? Also, my company is in the process of changing to a Windows environment, and I'd like to know whether my Paradox 4.0 applications will work with Paradox for Windows.

— Alan Biren

A Yes, there's a way to print some fields in different — and larger — fonts than others in Paradox 4.0. It involves using your printer's control codes, something that nearly all nonPostScript printers have. You didn't tell me what printer you're using, so I can't give you the exact codes, but the basic approach remains the same.

First check your printer manual to see what control codes are needed for printing the fonts you want and have available. This information is usually ►

included in an appendix called Printer Control Codes, Command Sequences, or something like that. Then go into the report you use to print your labels, and make room for a calculated field on either side of the regular field you want to change. Make sure to leave enough space for the entire length of the control code string. Don't worry that your field is getting pushed to the right in the report layout — when the report is printed, the control codes will be interpreted as commands by the printer and won't be printed as text.

Next, move the cursor to the first space you made — the one before the field you want in a larger font — and select *Field-Place-Calculated*. In the resulting calculation box, enter (within quotation marks) the control code for printing your large font. Where your manual has you enter an Escape character as part of a control code, substitute `\027`. Then place another calculated field, this one with the code for returning to your normal font, after that field or fields.

Some control codes get pretty long and complicated, and many are made up of several pieces: one for type style, another for size, another for boldface, and so on. For example, on my LaserJet-compatible OkiLaser 400, printing bold Swiss type with a 14.4 point size requires the code `"\027(slp14.4v0s3b4T"`. To go back to my default 10-point Helvetica, I must use `"\027(slp10h12v0s0b3T"`. If your printer doesn't support scalable fonts, be sure to choose a point size that your type style comes in.

Regarding your last question, you can use Paradox 4.0 data files in Paradox for Windows, but that's about as far as it goes. You can't use the same forms, reports, or applications, as the Windows version handles these tools in an entirely different way.

Room to swing a .TMP

Q I am using Foxpro 2.5 for Windows on a 486DX machine with 8Mb of RAM and a 125Mb hard disk (with 35Mb free space at the moment). Whenever I run queries linking large database files (around 10Mb), the following message appears on the screen about three-quarters of the way through the job.

Not enough disk space for wrk_dir\n.tmp
where wrk_dir is the working directory and n is an eight-digit number. Is there some way to run such queries without deleting files to free up hard disk space?

— Vic Santos

A Well, yes and no. You will have to make more space available — that's a very big job you're doing, there — but you won't have to delete files to do it. The answer is disk compression and you have two options: either upgrade to MS-DOS 6.2 and use the now perfectly safe DoubleSpace or use one of

the major third-party packages, such as Stacker or SuperStor. SuperStor Pro is the one that has scored the highest speed in our tests and Stacker has scored the highest compression ratio. Both these packages are faster than DoubleSpace and compress more.

Recording incomplete dates in Paradox for Windows

Q Working for a law firm, I often enter data from documents that have incomplete or missing dates. Sometimes only the month or year is available for a particular document and other times not even that. The problem is that Paradox for Windows won't let me enter a date such as 05-00-84 or 00-00-91, to say nothing of 00-00-00, which I use to show that a date is missing, not just forgotten during data entry. Is there any way to get Paradox for Windows to accept these incomplete dates? I've thought of making my data fields alphanumeric, but if I do that, they would lose the data entry controls inherent in a date field.

— James Barrett

A I'm afraid Paradox for Windows won't permit you to enter the dates you describe in a date field. But if you do change your date fields to alphanumeric, you can use picture validation to restrict data entry in a way that is similar to the way date fields do it. You still won't be able to do date arithmetic, but as Paradox would not know how to perform calculations with your incomplete dates, you probably aren't doing it anyway.

To change your date field and add a "picture", select *Table-Restructure* if your table is open on the desktop, or *File-Utilities-Restructure* and the name of your file if it isn't. Change your date field's type to Alphanumeric and its size to 10. With the field still selected, choose *Validity Checks* from the *Table Properties* drop-down menu on the right side of the dialogue box. Click on the *Picture* box and enter `##/##/####`. This will force the user to enter two digits each for the month and day and four digits for the year; a four-digit year is preferable as we approach the end of the century. Paradox will automatically fill in the slashes as the numbers are entered. To close the dialogue and save the table with its new structure, click *Save*.

The picture noted above doesn't check for valid months and days, and it will allow you to enter dates like 13/79/1994. If you want more control, enter `{0{0,1,2,3,4,5,6,7,8,9}, 1{0,1,2}}/{0{0,1,2}{0,1,2,3,4,5,6,7,8,9},3{0,1}}/####` in the *Picture* box. This picture will still let you enter 4/31/1994 or 2/29/1995, but it will stop the more extreme errors.

— Celeste Robinson

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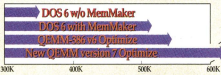
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How we got the chart numbers: CPU—486/33 ALU Power Business VESA machine equipped with 31 megs of RAM and running MS-DOS 6. Comparisons were done using the following memory managers: QEMM 7, QEMM 6, MS-DOS 6, MemMaker. In addition to the driver test described required by each memory manager, the following drivers, DOS resources and programs were loaded for all comparisons: in the CONFIG.SYS file: SETVER.EXE, DOS-HIGH FILES-20, BUFFERS=40, STACKS=64, MSCD.SYS, SDBK12.SYS, SCD.SYS, DOS-SHELL statement, in the AUTOEXEC.BAT file: VSAME, MSCDEX, UNDELETE, LSC.COM, NEWDISK.COM, IPUDISK.COM, NET or EMBLNET, MICROSE.COM, SMARTDRV.COM, PRINSCAP.COM. ©1995 Quarterdeck® Other Systems. Trademarks are property of their respective owners.

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Fractures in Ami Pro 3.0

Q I often need to include fractions in my Ami Pro 3.0 documents. While I can insert the fractions $\frac{1}{2}$, $\frac{3}{4}$, and $\frac{5}{8}$ using the Windows 3.1 Character Map application, I'd like to be able to use fractions like $\frac{1}{3}$ and $\frac{2}{5}$, which are not available. I know I could use the Equations editor feature, but this seems like overkill. Is there an easier solution?

— Susan Taylor

A The solution to your problem isn't all that difficult, but it requires a written macro since the numbers in your fractions will probably change. To create the macro, first enter the text shown in the figure below into a blank Ami Pro 3.0 document. Check your typing carefully, then select *File-Save As...* In the Save As dialog box, choose the *Ami Pro Macro* entry in the List files of type drop-down list. Next, enter *FRACTION.SMM* in the *File name* text box, then click OK or press <Enter> to save the macro.

Since you'll use this macro frequently, you should probably assign a keystroke shortcut to it. To do this, select *Tools-Macros-Edit*. In the *Edit Macro* dialog box, highlight the *fraction.smm* entry in the *Macros* list. Then click in the *Playback shortcut keys* box and press your desired shortcut key combination. To avoid conflicts with existing keystrokes, I suggest using <Ctrl>+<Shift>+F. Click *Save* and then OK to save your key combination. Finally, select *File-Save* to make your changes permanent. You can then close the window that is displaying your macro codes.

To use the macro in your document, position the cursor and press <Ctrl>+<Shift>+F or whatever

shortcut key you assigned. Type the numerator for your fraction in the dialogue box that appears, press <Enter>, then type the denominator in the next dialogue box and press <Enter> again. You'll see your fraction displayed correctly on the editing screen.

Here's how the macro works: *SpecialEffects(64 "")* sets up superscript formatting. *Numerator = Query\$("Enter your numerator")* prompts you for the numerator.

Type({Numerator}) types the numerator variable into your document. *SpecialEffects(0 "")* restores normal formatting to the rest of the document.

Type("/") types a slash in the document for your fraction. *SpecialEffects(128 "")* sets up subscript formatting.

Denominator = Query\$("Enter your denominator") prompts you to type in the denominator.

Type({Denominator}) types the denominator variable into your document.

SpecialEffects(0 "") restores normal formatting once again.

Type(" "), of course, simply types a space.

Getting ahead with WinWord envelopes

Q I like to print a year's worth of envelopes for recurring mailings, such as rent and electric bills, at one time. But with Word for Windows 2.0c, I can print only one envelope at a time on my Hewlett-Packard LaserJet Series III printer. Since I have an envelope tray, it should be easy to print all 12 envelopes in a single pass, but I can't figure out how to do it.

— Dan Beaulieu

A Word for Windows can do what you want, although it's not all that obvious how. The problem occurs because direct envelope printing bypasses the Print dialog box, which is where you normally set the number of copies. To print multiple copies on a LaserJet Series II or Series III printer, there's a step that you must take before you click the Envelope icon on the tool bar or execute the Tools>Create Envelope command.

First, select *File-Print Setup*. Then, in the dialogue box, with your current printer highlighted, click the *Setup* button. In the next dialogue box, enter the number of copies that you want and then select OK twice to return to your document.

```
FUNCTION FRACTION1 ( )
SpecialEffects (64 "")
Numerator = Query$ (Enter your numerator")
Type ({Numerator})
SpecialEffects (0 "")
Type ("/")
SpecialEffects (128 "")
Denominator = Query$ (Enter your denominator")
Type ({Denominator})
SpecialEffects (0 "")
Type (" ")
END FUNCTION
```

Create any fraction in Ami Pro with the help of this simple macro instead of the Equations editor

If you don't see a *Copies* field, it may be because your printer doesn't support multiple copies in this way. If that's the case, you'll have to print your envelopes one at a time.

Now click the *Envelope* icon or select *Tools—Create Envelope*. Fill in your address information and then select the *Print Envelope* button. You'll get however many copies of the envelope you specified during the previous step. Just be sure to put your envelope tray in the printer before beginning the print job.

A final note: If your printer tells you to insert an envelope manually, select *Tools—Options* before the next envelope printing session. Choose the *Print* icon in the *Category* list and check the *Printer's Envelope Feeder has been Installed* option. With that box checked, your printer will feed from the envelope tray automatically.

WordPerfect 6.0 button navigation

Q I love the new multiple button bars in WordPerfect 6.0 for DOS, but displaying a different button bar is a pain. You either have to plough through menus or use the button marked *BBar Sel*, which is a standard feature on the program's stock button bars. But using *BBar Sel* requires scrolling all the way to the next line of buttons. Is there a way to fix this?

— Alan Bridges

A You can move any button to any position on its bar. I would advise making the *BBar Sel* button the first button on every bar to make navigation easier.

First, select *View—Button Bar Setup—Select*, highlight the button bar that you would like to modify and click *OK*. Next, select *View—Button Bar Setup—Edit*. Scroll down the list of buttons in the dialogue box that appears, then highlight *BBar Sel*. Now select *Move Button*.

Scroll back up to the top of the list of buttons, and highlight the first button. Select *Paste Button* to insert the *BBar Sel* button at the top of the list. Click *OK* or press **<Enter>** to finish the job and store the new arrangement as the default. Repeat this operation for each button bar and you'll always have instant access to your entire list of specialised button bars.

Squeezing text in WordPerfect 5.1 for DOS

Q From time to time, I need to compress a block of text in order to make it fit into a smaller space. I have been choosing a smaller font size whenever possible, but with fixed fonts such as my

laser printer's Courier, this approach will not work. Do you know if there is anything that I can do to tighten things up?

— Sid Fleischer

A Great question. Start by positioning the cursor at the spot where you want to begin tightening up text. Then press **<Shift>+<F8>+463**. If you're using drop-down menus, select *Layout—Other—Printer Functions—Word Spacing*. Now you're ready to begin changing either the spacing between words or the spacing between individual letters. In most cases, it's best to change both equally.

To tighten up the word spacing, press 3 or select *Percent of Optimal*. Type in a value that represents a percentage of the original spacing, then press **<Enter>**. A good starting value is 90 per cent. Repeat the same process in the menu for letter spacing, using the same value.

When you're done, press **<F7>** to return to the editing screen. Notice that you can stretch text as well by entering a value larger than 100.

If you want the entire document to be compressed, you're finished. However, if you want to compress just part of the document, move the cursor to the end of the text to be compressed and repeat the steps above, setting the word and letter spacing to their *Normal* or *Optimal* values. But don't try to use these commands on a marked block of text; they won't work.

Changing default file extensions in WinWord

Q I'd like to change the default DOC extension in Word for Windows 2.0c to my initials. This would make my documents easier to find, but typing in that extension each time I want to load or save a file is tedious. Can you help?

— Patrick Dunphy

A Sure. With Word for Windows running, select *Tools/Options*. Choose the *Win.ini* icon in the *Category* list. Next, click inside the *Option* text box, and change the current text so that it reads *DOC-Extension*. Then you click inside the *Setting* text box, delete the old text, and type *.PD* or whatever other extension you want to use as a default. Finally, check your typing and then click the *Set* button followed by *Close* to save the settings and return to your document.

For this change to take effect, you will have to restart Windows. Once you do, you will find that your new extension has become the default and will show up whenever you select *File—New*, *File—Open*, *File—Save* or *File—Save As*.

George Campbell

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Killing the maverick

Q One of the best things about Windows 3.1 is the way you can kill a malfunctioning program with the <Ctrl>+<Alt>+<Delete> "three-fingered salute". But pressing those three keys in OS/2 will reboot your system. How can I stop a maverick in OS/2 without resetting the whole system?

— George Mandeville

A Luckily, there is a simple way to terminate unwanted applications in OS/2: Press <Ctrl>+<Esc>, then wait. If the application is truly tying up the system and not responding to system requests, you'll eventually get a dialogue box stating just that. Then you just press <Enter> to kill your application.

If your application is not hung up, you'll get the Window List that <Ctrl>+<Esc> usually brings up. You can still terminate the application (without saving any data) by right-clicking the application name to open the pop-up menu and selecting Close.

High resolution video drivers

Q I recently switched to a super-VGA video card. OS/2 2.1's installation seemed easy enough at first, but about halfway through I got a dialogue box with the option to "Install Using Display Adaptor Utility Program". What does this mean?

— Tim Bartz

A OS/2 needs to know about your hardware, and your graphics card probably came with a utility that helps the operating system find out. To install a new video driver, start by typing DSPINSTL at an OS/2 command prompt.

In the resulting dialogue box, click Primary Display to put a check mark next to it, then click OK. This will bring you to another dialogue box where OS/2 will ask you for your video chip type; the default that OS/2 selects for you is usually correct, so just click OK. The third dialogue, Monitor Configuration/Selection Utility, asks for the utility program.

So what is this utility OS/2 is asking for? When you bought your super-VGA video card, it probably came with a disk full of device drivers, utilities, and demonstration programs. One of those programs is a DOS utility — probably called something like SETVGA or VMODE—that lets you set your resolution and other video options. OS/2 needs this infor-

mation to confirm which video chip your graphics card uses, the resolution you want to run, and whether you need an interlaced display.

If you have such a program available and know where it is, select *Install Using Display Adaptor Utility Program* and click OK. Then enter the path and file name of your DOS video card utility program. Your screen may buzz and flicker a few times as OS/2 runs the utility and checks the video card settings (you can later confirm that OS/2 detected the correct video chip by going to a full-screen DOS session and typing SVGA Status). You'll then see a dialogue box from which you can choose your display resolution. After you choose one and click OK, OS/2 will prompt you for the proper disks to insert for the driver. When the installation is finished, shut down your system and reboot for the changes to take effect.

Never use the Reset button

Q I know that I should run OS/2's Shutdown command before turning off my computer, but sometimes my system locks up and I have to use the Reset button or press <Ctrl>+<Alt>+<Delete>. When that happens, sometimes I lose the data I'm working on, and sometimes I don't. What's up?

— Janet Cyr

A To improve performance, OS/2 has a disk cache that stores data in memory before writing it to your hard disk. But what do you think happens if the data is still waiting in memory when you reset your computer? The data vanishes.

However, OS/2 is smart enough to trap <Ctrl>+<Alt>+<Delete>. When you press those keys, you get the message The system is rebooting . . . OS/2 then flushes out the cache and saves the changes to disk before shutting down.

On the other hand, when you press the Reset button, your PC is reset beyond OS/2's control, and anything that was in memory — including your changes — simply disappears. The moral of the story is to avoid the Reset button at all costs. Use the Shutdown option whenever you can, but when OS/2 locks up, try pressing <Ctrl>+<Alt>+<Delete> first.

Under DOS, incidentally, there's no significant difference between hitting the Reset button and pressing <Ctrl>+<Alt>+<Delete>. If version 6.0 and >

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THE HELP SCREEN

OS/2 Q&A

TIP OF THE MONTH

Increasing performance with a swap file

Windows and OS/2 both let you improve performance by creating swap files. A swap file acts as virtual memory for your PC; when Windows or OS/2 runs out of real memory, it uses the swap file to store some of the extra data temporarily.

Windows lets you change the swap file settings in the Control Panel using the Virtual Memory button under the 386 Enhanced icon.

OS/2, on the other hand, keeps its swap file settings in the CONFIG.SYS file, where you can change them with a text editor. OS/2's swap file is called SWAPPER.DAT.

To change your swap file settings, look for the line in CONFIG.SYS starting with `aSWAPPATH=i`. The full statement will look something like `aSWAPPATH=C:\OS2 2048 4096i`.

The first parameter, `C:\OS2`, is a directory on your hard disk. You can modify this entry if you want your swap file stored in a different directory or hard disk. For example, you may want to place it on the disk partition with the fastest access.

The second parameter tells OS/2 the minimum amount of free disk space to leave on your hard disk (2,048K). It needs the limit because the swap file can grow and shrink, and if it grows too much, you won't have room for anything else.

The third parameter tells OS/2 how much space to allocate for the swap file initially (4,096K). Even though SWAPPER.DAT can grow and shrink, it will operate most efficiently if its space is allocated all at once, so that it isn't fragmented. If you have enough space to spare, I would recommend using a swap file of 10Mb to 15Mb.

older is set for disk buffering, you have to flush the buffer manually before resetting by either method; in version 6.2, the buffers are always flushed before the command line prompt appears.

Moving windows

Q Sometimes a window or dialogue box ends up off screen and I can't retrieve it with the mouse. How can I get it back?

— Patti Crocker

A You can't move a window with your mouse if you can't click on its title bar, and under certain circumstances — for instance, when you change video resolutions — a title bar can disappear off the edge of the screen. There are two ways to move a window if this happens to you.

If you have only one problem window, click on it to make it active, then press `<Alt>+<F7>`. You can then move it with the cursor keys or mouse. Press `<Enter>` when you're done.

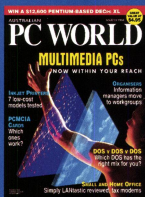
If you have a number of errant windows, press `<Ctrl>+<Esc>` to bring up the Window List, then hold down the `<Ctrl>` key as you click on all the entries you want to move. Right-click one of the highlighted entries to bring up the pop-up menu, then select Cascade or Tile to rearrange only the selected items.

Lou Miranda

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☐ Business ☐ Home

Loans in any spreadsheet

Q I have a monthly payment schedule for a loan that shows the amount due, the amount paid toward interest, and the amount paid toward principal. Some months I can pay extra toward the principal, but other months I can't. My understanding is that the amount of interest I pay should decrease when I make extra payments. How can I set up my spreadsheet to show the changes?

— Dorothy Parrill

A Take a look at Figure 1. I've set up this example in Excel, but it will work in any spreadsheet. The data entry cells, containing the principal, interest rate, and term of the loan are shown in B3:B5; the formulas in D3:D5 give the required payment and the nominal cost of the loan if you paid the required amount each time. The table beginning at A8 contains the history of payments, the principal and interest amount of each payment, the principal remaining after each payment, and the cumulative interest paid.

To set up the model, start by entering the labels and values shown in A3:C5 and in A7:F7. Format cell B4 for per cent, cells B8:F17 for two decimal places, and cells B3 and D3:D5 for currency. Enter the payment numbers and amounts shown in the payment schedule in A8:B19. Then enter the following formulas:

D3: @PMT(B3,B4/12,B5*12) if you're

using Excel: =PMT(B4/12,B5*12,-B3)

D4: +D3*B5*12

D5: +D4-B3

C8: +B8-D8

D8: +B4/12*B3

E8: +B3-C8

F8: +D8

C9: +B9-D9

D9: +B\$4/12*E8*(E8>0)

E9: +E8*(C9*(B9>0))

F9: +D9+F8

Finally, copy the formulas in cells C9:F9 into C10:F19 to complete the schedule of payments for a 12-month loan.

If the numbers on your worksheet agree with Figure 1, you've entered the formulas correctly. (In 1-2-3, don't worry if some of the zeros near the bottom of the worksheet appear as negative zeros; see 1-2-3 in the *Round* on page 205 in the March issue for an explanation.) To apply this to an actual loan, re-enter your own numbers in B3:B5, and copy the formulas in C8:F19 into as many additional rows as the length of

your loan requires. Then enter your own payments in column B from row 8 down; you will probably want to enter the amount after every payment.

Here's how the formulas work. The required payment formula in D3 uses the PMT function to calculate a loan payment. It yields the amount necessary to pay off a loan given the principal (B3), the number of payments (B5*12), and the interest rate per payment (B4/12). The estimated total payments in D4 is the total of all your payments if you paid just the required amount each time; it includes all interest and principal. The estimated total interest (D5) is simply that amount minus the original principal.

In the payment schedule, the interest portion of the first payment (cell D8) is the interest rate for one month (B4/12) multiplied by the original principal. Thus the principal portion of the first payment (in cell C8) is the amount of the first payment (B8) less that interest portion. The principal remaining after the first payment (E8) is the original principal minus the principal portion of the first payment (B3 minus C8). This number becomes the basis for the interest calculation for the second payment (D9). This formula includes a logical expression (E8>0), which reduces the interest amount to zero after the loan has been paid off, as shown in cells D18 and D19. The remaining principal formula in E9 reduces the previous principal amount by the principal portion of the current payment, but only after a payment has been entered (the logical expression B9>0 sees to that).

AMORTISATION SCHEDULE					
Loan Principal:	\$20,000.00	Required Pmt:	\$1,749.03		
Interest Rate:	9.000%	Est. Total Pmts:	\$20,988.35		
Term (years):	1	Est Total Int.:	\$988.35		
Payment Number	Payment Amount	Principal	Interest	Remaining Principal	Cumulative Interest
1	1,749.03	1,599.03	150.00	18,400.97	150.00
2	1,749.03	1,611.02	138.01	16,789.95	288.01
3	1,749.03	1,623.10	125.92	15,166.84	413.93
4	1,749.03	1,635.28	113.75	13,531.57	527.68
5	2,500.00	2,398.51	101.49	11,133.05	629.17
6	2,500.00	2,416.50	83.50	8,716.55	712.67
7	2,500.00	2,434.63	65.37	6,281.92	778.04
8	2,000.00	1,952.89	47.11	4,329.04	825.16
9	2,000.00	1,967.53	32.47	2,361.51	857.62
10	2,379.22	2,361.51	17.71	0.00	875.34
11		0.00	0.00	0.00	875.34
12		0.00	0.00	0.00	875.34

Figure 1: Use this worksheet to calculate variable real estate principal and interest amounts

The cumulative interest column merely adds the interest portion of the current payment to the cumulative interest from the previous payment.

Skipping over nothing in Quattro or 1-2-3

Q I have an inventory spreadsheet template in Quattro Pro 4.0 that contains information about 180 products. I fill in the quantities and the cost, and the spreadsheet calculates the selling prices. When I print the sheet, I want it to skip the rows where the quantity is zero. How can I do this without deleting all the zero rows manually?

— Gary Webster

A One solution that works with any release of Quattro or 1-2-3 is a macro that marks the zero rows with a label that begins with the non-printing label prefix and instructs the program to omit those rows from the printout. Another solution that works with any program is to set up your spreadsheet as a database, fill in the non-zero quantities, then extract the non-zero rows into a report worksheet for printing. I have discussed the database alternative before in these pages, so I'll focus here on the macro approach shown in Figure 2.

To set it up, enter the labels shown in B1..D1, the numbers in B2..C11, and the macro code in C14..D19. In D2, enter whatever formula you use to calculate price (I've used C2*1.3 to assume a 30 per cent markup) and copy it into D3..D11. Then use the command *Edit-Names>Create* (in 1-2-3, it's *Range-Name>Create*) and name each of the ranges shown in the figure at F1..G4. Then designate the range PRINT as the print range: in Quattro Pro, execute *Print-Block*, press <F3>, select *Print* from the menu, and press <Enter>. In 1-2-3, select *Print-Printer-Range*, type PRINT, and press <Enter>, then <Escape>. To execute the macro, press <Alt>+Z.

Here are the macro details:

D14: {goto}PRINT(r){d} positions the cell pointer at the first value in the column that's named Qty.

D15: {blank TAGS} clears any previous skip tags from column A.

D16: {if @cellpointer("type")="b"}{quit} halts the macro after it has processed the last quantity.

D17: {if @cellpointer("contents")>0}{d} {branch \Z_1} checks to see if the current quantity is more than zero. If it is greater than zero, this statement selects the next cell and returns the macro to D16.

D18: {I} {SKIP(r)}{d} runs only if the quantity is zero. The statement selects the left adjacent cell, enters the tag !SKIP, and then selects the next quantity.

D19: {branch \Z_1} returns the macro to D16 to process the next quantity.

Excel's print area revealed

Q In 1-2-3, I named ranges throughout my spreadsheet for easy navigation and printing. When I wanted to print a range, I simply entered one of the existing range names in the *Print-Printer-Range* command. Now that I'm using Excel, I find that each time I want to print a portion of the worksheet, I must select it, then use *Options-Set Print Area*. How can I "set print area" on a range I've already named?

— Carl Anderson

A Easy. Have you noticed that if you execute Excel's *Options-Set Print Area* command, then select *Formula-Define Name*, the range name *Print_Area* appears in the *Define Name* dialogue box? Instead of a Lotus-type "print range", Excel uses this special range name to identify the print area. If the name exists, Excel prints what's inside; if not, it prints the entire worksheet.

The trick to printing a named range is to skip the *Options-Set Print Area* step altogether and set the print area yourself. To print a named range, select *Formula-Define Name*; enter *Print_Area* in the *Name* text box of the resulting dialogue box. In the *Refers to* text box, enter an equal sign (=) followed by the name of the range you want to print, then press <Enter>. Once this is done, selecting *File-Print* will print your named range.

Richard Scoville ➤

	A	B	C	D	E	F	G	H
1		Qty	Cost	Price		PRINT	A1..D12	
2		12	\$73.00	\$94.90		TAGS	A2..A12	
3		10	\$11.00	\$14.30		\Z	D14	
4		9	\$45.00	\$58.50		\Z_1	D16	
5		0	\$47.00	\$61.10				
6		3	\$32.00	\$41.60				
7		1	\$91.00	\$118.30				
8		2	\$48.00	\$62.40				
9		0	\$56.00	\$72.80				
10		4	\$56.00	\$72.80				
11		1	\$3.00	\$3.90				
12								
13								
14			\Z	{goto}PRINT-r){d}				
15				{blank TAGS}				
16			\Z_1	{if @cellpointer("type")="b"}{quit}				
17				{if @cellpointer("contents")>0}{d}{branch \Z_1}				
18				{I} {SKIP-r){d}				
19				{branch \Z_1}				
20								
21								

Figure 2: Want to avoid printing cells whose quantity is zero? A macro trick lets you mark those rows using the nonprinting label prefix !; then it skips those rows when you print

Good advice: how to build a spreadsheet and survive to tell the tale

James Abbott, who has been teaching people about spreadsheet software since the days of VisiCalc, tells a story about a guy who was living in a cardboard box in Hyde Park, eating out of garbage bins, and mumbling to himself a lot. Seems this fellow had been a golden boy general manager for a multinational company — you know, the Jaguar, the kids in private schools, the yacht, the penthouse, and so on. He leveraged the buy-out of a major competitor with 1-2-3 release 1A. After the deal was consummated and the cash flows turned out to be red instead of black, the auditors examined our hero's spreadsheets and discovered that everywhere he intended to erase a cell, he had instead entered a space. Thus, all the @AVG and @COUNT functions he used gave the wrong answers. The rest, as they say, is history.

Here are six spreadsheet rules to help you avoid a similar fate:

Don't erase with spaces. Never try to clear out a cell's contents by pressing the space bar followed by <Enter>. In 1-2-3 and Quattro, this practice causes certain statistical functions — notably @AVG, @COUNT, @STD, and @VAR — to give invalid answers. For instance, the formula @AVG(A1..A5) is equivalent to the sum of the values in A1..A5 divided by the number of **non-blank** cells in that range. In this scheme, a cell containing a space is equivalent to a zero: the formula divides by one more for the space, and the average is too small — about the size of a cardboard box in Hyde Park.

Point, don't type. Never type cell and range addresses when you build formulas. If the formulas are complex, you will sometimes type the wrong address, and you may not discover the error before your pink slip arrives. Instead, use the arrow keys or the mouse to select the cells you want to include in a formula. If the spreadsheet is large, give important cells meaningful range names. Then, as you build formulas, use <F3> to select the names from a list.

Never move data cells. In any spreadsheet, the data cells are the ones you fill in with data-numbers and text as you work. The other cells contain either formulas that refer to the data cells, static text, or nothing at all. When you move a

data cell, whether by dragging and dropping, using the Move command, or cutting and pasting, any formulas that refer to that cell change to refer to the cell's new position.

For instance, if cell A1 contains the formula @SUM(B1..B50), and you move the data in B1 to B2, the formula will change to @SUM(B2..B50). Any number you put into B1 from that point on will not be included in the sum. It's a change that's easy to overlook when you're in a hurry — but you'll have plenty of time to reflect on your error while you're waiting in the CES office.

Build formulas using dummy data values. Never build complex formulas based on real data values; it's too easy to miss careless errors in formulas. Instead, fill in the data cells with dummy values — 1s, 10s, 100s — anything that makes it easy to spot incorrect calculations.

When you're done, and you're sure the formulas are okay, erase the dummy values and enter your own.

Make the data cells look different. When you're playing the what-if game in a dense spreadsheet, it's easy to enter a data value accidentally into a cell that contains a formula. This kind of error doesn't show up right away, but it can cause subsequent changes to yield wrong answers, and it's notoriously hard to detect.

To avoid these errors, do something systematic to make the data cells look different: in 1-2-3 for DOS, use *Range-Unprot*, which changes the colour of the cell text (in Quattro for DOS, it's *Style-Protection-Unprotect*). In Excel and other Windows spreadsheets, you can format the cells so that data cells have lightly shaded backgrounds or differently coloured text. If you can distinguish a formula cell from a data cell, you won't overwrite it carelessly.

Never sign off on a spreadsheet you don't understand. Today's spreadsheet programs contain lots of exotic analytical tools: statistical tests, solvers, forecasting functions, you name it. Don't simply use this stuff and assume that the answers are truth. Get professional advice, double-check your setup, test your model with a textbook example, do whatever it takes. Don't assume, find out!

Finessing floppies

If you've accumulated as large a collection of floppies as I have, you'll probably appreciate an easy way to keep track of your ever-growing collection. CATALOG.BAT prints directory listings of your floppies that you can keep with the disks. It will even record hidden files.

The batch file uses the new CHOICE command of DOS 6 to ask you which drive you want to catalogue (A: or B:). It then gets the volume label and directory from the floppy disk using the command DIR A:\ /S /A /O:N, alphabetising the files as it does so. Finally, it sends the whole listing to the printer. You can file the catalogue page for later reference, either by numbering both the page and the disk or by keeping the page with the disk.

— Justin Jordan

Editor's note: This is a fast, no-nonsense way of keeping track of what's on your floppies. Best of all, it

```
@ECHO OFF
CLS
ECHO.

:REPEAT
REM Ask for action
CHOICE /CABQ /N Drive to catalog (Q to Quit)?
ECHO.
IF ERRORLEVEL 3 GOTO END
IF ERRORLEVEL 2 GOTO DRIVED
IF ERRORLEVEL 1 GOTO DRIVEA

:DRIVEA
SET CATDRIVE=A
GOTO CATALOG

:DRIVED
SET CATDRIVE=B
GOTO CATALOG

:CATALOG
REM Catalog drive %CATDRIVE%
CLS
ECHO Now cataloging drive %CATDRIVE% ...
ECHO Catalog for drive %CATDRIVE%: > TEMP.TXT
ECHO. >> TEMP.TXT
DIR %CATDRIVE%\S /A /CN >> TEMP.TXT
TYPE TEMP.TXT > PRN
ECHO ? > PRN
TYPE TEMP.TXT >> FLOPPIES.TXT
ECHO Cataloging of drive %CATDRIVE% complete!
GOTO REPEAT

:END
```

Figure 1: Catalogue your floppies with this handy batch file

lets you take a two-fisted approach — you put one floppy in the drive while you're printing the contents of another, clearing away a pile of unmarked disks in no time. I changed Jordan's batch file slightly so in addition to printing, it saves all your floppy listings to a single ASCII file for quick searches.

Create CATALOG.BAT as an ASCII text file, and save it to a directory on your PATH. There's one trick you need to know when entering the file: you can't type the character \varnothing , which is ASCII code 12. How you place it in your document depends on what text editor or word processor you use. If you use the EDIT program in DOS, type $\langle \text{Ctrl} \rangle \text{P}$, then hold down $\langle \text{Alt} \rangle$ as you type 12 on the numeric keyboard.

By the way, this batch file is a good example of the CHOICE command in DOS 6,

which lets you pick one of several options to redirect your batch file. If you have more than two floppy drives, it's easy to add additional drive letters; just be sure to adjust the IF ERRORLEVEL statements to reflect the new choices.

Words in reverse

Having read in Bryan Davis's letter regarding reverse printing that this could be done only with whole paragraphs, I was moved to check this out. It turns out that you can easily print as little as one word in reverse.

Just **select the line** containing the words concerned and convert it to a three-column single-row table (put tabs in on both sides of the section you want to reverse). Now format the table to set Space between columns to zero and drag the column borders until the words on the line are spaced normally. Now select the text you want to change, select Format-Border-Shading... and set the background to black. Finally, select Format-Character... -Colour and set the letter colour to white.

If the words you want to convert are at the beginning or end of a line, the table only needs to have two columns.

— Richard Parkin

Editor's note: Richard's method works just fine and while it has to be a little manual, it's not difficult.

Many marquees

I like to use the Marquee screen saver not just to save the screen but to leave messages to callers. I have several messages for different purposes — to let people know when I'm in a meeting, out to lunch, and so on.

Here's how to create several pre-configured versions of this standard Windows screen saver, each with a different message.

A screen saver, even though it has the extension SCR, is actually an executable program. If you add the extension SCR to the Programs= line in your WIN.INI file, you can launch any Windows screen saver directly.

For the easiest launching, change your WIN.INI, then drag SSMARQUEE.SCR from the File Manager into a Program Manager group. Highlight the new icon, then press $\langle \text{Alt} \rangle \langle \text{Enter} \rangle$ and add the parameter /S to the end of the command line. You can now start that particular screen saver as easily as any \triangleright

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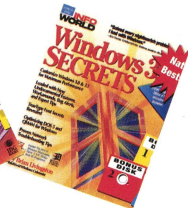
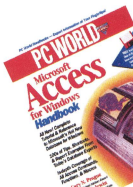
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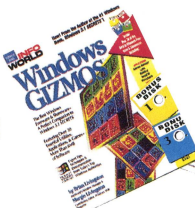
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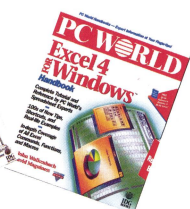
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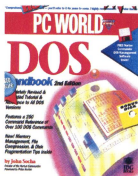
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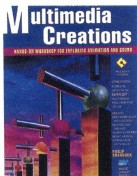
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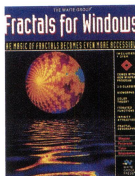
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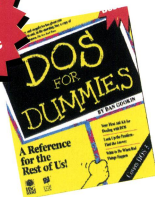
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we must have
your signature..... Expiry
date.....

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Company

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application. You can place as many screen savers as you like in Program Manager for manual launching and still set up another in the usual way via the Control Panel to serve as a normal screen saver.

To create a different Marquee screen saver, make a copy of the file SSMARQUE.SCR with a new name but in the same directory. The name must start with SS, be a full eight characters long and have the extension SCR, as in SSMARQUE2.SCR. Open the new copy with Windows Write and select No Conversion in the resulting dialogue box. Once you have the file in Write, use Find/Replace to replace all instances of SSMARQUE with SSMARQUE2 (or whatever file name you chose). With the Replace dialogue box still up, replace all instances of MARQUEE with MARQUEE2 (the name can be anything you like, as long as it's seven characters long). Save the file and exit Write.

Now if you enter the Control Panel's Desktop option, you'll notice MARQUEE2 in the list of screen savers. Use the Control Panel to set it up with any message you like.

— James Erickson

Editor's note: This tip, like a few others that have appeared in Star-Dot-Star, reveals a use of Windows Write for which it was probably never intended: as a binary editor that can patch applications. The "No Conversion" option allows you to change the text within any binary file — as long as your new text is exactly the same length as what it's replacing.

No boots indoors, please

I operate a cluster of PCs, whose screens and keyboards are available for students and the general public. For security reasons, we keep the systems themselves locked up behind a counter and want to make sure no-one can reboot the machines from their keyboards.

N noboot.com

```
E100 EB 6B 90 00 00 00 00 50 1E B8 40 00 8E D8 A0 17
E100 00 24 0C 3C 0C 75 60 E4 60 24 7F 3C 53 75 05 80
E120 26 17 00 FB 1F 58 2E FF 2E 03 01 43 74 72 6C 2D
E130 41 6C 74 2D 44 65 6C 20 44 65 66 65 61 74 20 49
E140 6E 73 74 61 6C 6C 65 64 0D 0A 43 6F 70 79 72 69
E150 67 68 74 20 28 43 29 20 31 39 39 33 20 42 72 65
E160 74 74 20 57 72 65 65 6C 65 79 0D 0A 24 B8 09 35
E170 CD 21 2E 89 1E 03 01 2E 8C 06 05 01 BA 07 01 B4
E180 25 CD 21 BA 2B 01 B4 09 CD 21 CD 27
RCX
8C
W
Q
```

Figure 2: To block out keyboard reboots, use this hex code to create a protective TSR for your AUTOEXEC.BAT file

I've designed a small TSR called NOBOOT.COM that protects against keyboard reboots. The program works by monitoring the keyboard and preventing the BIOS from seeing the <Ctrl>+<Alt>+<Delete> sequence. Once you install this TSR, the only ways to reboot the machine are by turning it off, hitting the reset switch, or running a program that bypasses the keyboard and forces the machine to restart. This program can also prevent users from rebooting during critical operations such as database transactions and hard disk defragmentation.

— Brett Wreely

Get a temp

If you haven't already done so, it's a good idea to create a directory on your hard disk for temporary files and to tell DOS and Windows where it is. DOS and Windows automatically put their files on the boot drive, but you may have good reasons to use a different drive and directory. For instance, you may want to place your temporary files on a secondary hard drive partition to protect your main one, or on a RAM disk to improve performance. Tell DOS and Windows where to find your temporary directory by including the command SET TEMP=d:\TEMP (d represents the drive where you want this directory located) in your AUTOEXEC.BAT file.

Why is choosing your own TEMP directory location so important? Both DOS and Windows have a tendency to use up a lot of disk space in that directory — the DOSHELL task switcher, for example, stores 640K for every background task — and your C: drive can quickly run out of space. By placing TEMP on another drive, you can ensure that DOS and Windows don't put their garbage among your good data. Likewise, many compilers and other applications create temporary files, and a SET TEMP command will give you explicit control over the locations of these files.

— William Perry

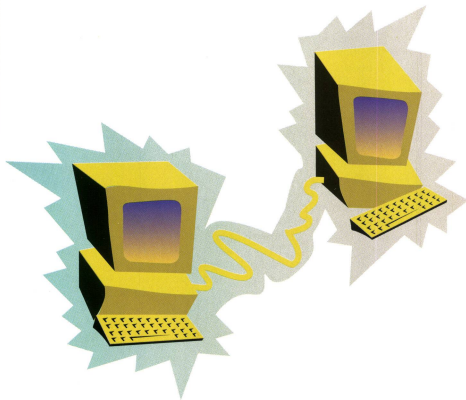
Editor's note: I almost dismissed this tip as unimportant until last week, when a telephone support technician asked me to help track down a bug by booting from a "clean" AUTOEXEC.BAT file. Naturally, because the empty AUTOEXEC.BAT didn't set a TEMP variable, Windows put its temporary files on my C: drive, using up most of the remaining space and causing even more errors than usual. Things calmed down once I had typed in the command SET TEMP=E:\TEMP and steered Windows to a less crowded drive.

If you want to send your temporary files to a RAM disk, you should still create a TEMP directory on it. Placing your temporary files in a drive's root directory — even if those files are the only ones on the drive — can cause problems since there are limits to how many files can go into a root directory.

Brett Glass

What your **NETWORK MANAGER** would like you to know

Bill Lawrence, a network manager, tells us how he spends his day and gives advice on how to make your job easier and more productive



You don't know me, but you probably know and work with someone just like me. I'm a network manager, and if we work together smoothly, it can pay off handsomely in trouble-free services and added resources for you and your group.

My work is demanding, and long hours are the norm. So are the job's contrasts: one moment I'm crawling under a desk to locate the cause of a failed network connection, and the next I'm standing in front of a committee of senior managers explaining why I want to recable headquarters.

Rapid technology changes present me with a steady parade of tough decisions. When is it best to update a particular aspect of the network, and when best to forgo a change for the sake of stability or to save money? And when is it time to change direction completely and abandon a technology that seems doomed to obsolescence? The only way I can make these decisions intelligently is with your feedback. ▸

I also must avoid another, more personal type of obsolescence. I need to continually study and research in my spare spare time to keep my knowledge level up to date. Many of the users on our network know more about particular software packages than I do, but I have a good excuse. While they are busy learning about Microsoft Excel 5.0, I'm catching up on more network-specific products — such as NetWare 4.01.

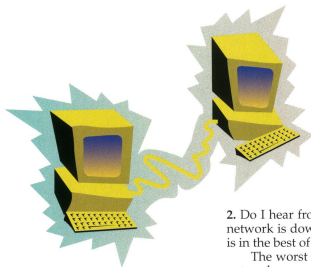
It's easy to become so immersed in the technology that I forget the one crucial point that influences everything I do: when I network comput-

mix of software to meet your work group's business needs? Is network performance adequate? Are shared resources, such as printers, ample and strategically located?

A network manager I know relies on a group of particularly astute users on his network to provide an early warning system. These users report any degradation in network performance or stability and also serve as the network manager's eyes and ears in the user community, advising him of user reactions to the various services provided by the network.

3. When making decisions, make me your partner sooner rather than later.

Consider this cautionary tale: a technically savvy manager needed to provide a custom database application for his department. So he hired a consultant whose credentials looked impressive, and in no time the application was built. The new program worked just fine until a department member located in another building tried to run it. The system crashed mysteriously, and the crash repeated itself whenever users in different buildings tried to use the application at the same time.



Two kinds of people are connected to networks: those who want to use the latest and greatest of everything and those who hate change

ers, I am really networking people. If my network does not meet the business needs of the people it connects, it has failed — even if it is technically perfect. There is only one way to make sure my network and the benefits it provides hit the target. I need to talk with people like you.

Six tips to get you talking

If you're not talking regularly with your network manager, you should be. Keep the following points in mind:

1. I need your advice and observations, whether I ask for them or not.

The best way to start talking with your network manager is to provide feedback about the network's features and performance. Does the network provide the right

2. Do I hear from you only when the network is down, when neither of us is in the best of moods?

The worst time to talk with your network manager is in the heat of a serious network problem. Calling to report that the network is down and to inquire when it might return to service is one thing; calling to vent a lengthy complaint about how you can't get your job done and threatening to escalate the matter to the highest levels of company management is quite another. Tying up the network manager on the phone to listen to your complaint means he or she is not free to resolve the problem.

Do your best to keep a cool head, and trust that your network manager will do his or her best to fix the problem as quickly as possible. Every network manager I know is concerned to the point of obsession with providing good service. One network manager sums up his policy this way: "When my network breaks, I don't go home until it's fixed."

The network manager was finally called in. He discovered that the database application was built with a software tool that employed an unusual communications protocol to manage record-locking among workstations. The routers that linked the networks in each building were not equipped to transfer this protocol. A little consultation up front could have headed off this sort of costly incompatibility.

If your network manager is like me, he or she will be honoured to participate in your technology selection process. I remind my clients to weigh in these factors:

- Does the new technology you are considering fit well with the existing workstation and network environment? Some incompatibilities are obvious — a program that requires Unix/Motif is a misfit if your organisation's PCs run DOS and Windows — but more subtle incompatibilities are easy to miss. A program that prints only to ▶

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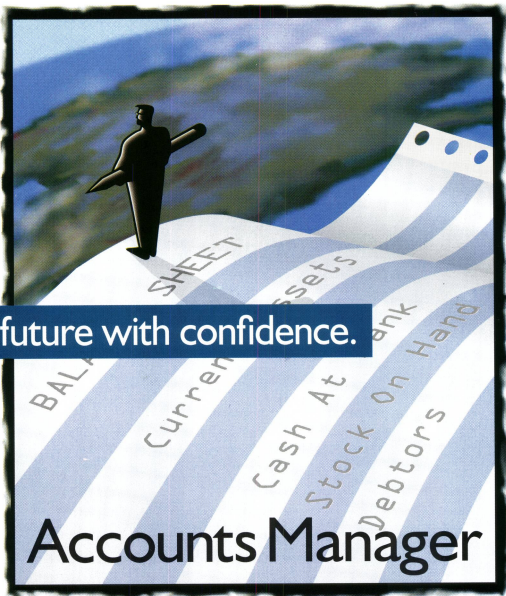
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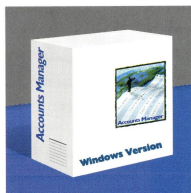
Accounts Manager is more than just another accounting package; it's a complete financial administration system that allows managers and administrators to look to the future with confidence.

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PostScript printers is a poor choice if none of the networked printers in your company are PostScript-aware.

- Does the new technology match the in-house expertise of your company's computing professionals? If you are comparing two document-management systems, and one uses a proprietary database to index the documents while another uses a common database manager for which you already have trained database administrators, then the latter product is clearly a better choice, all other factors being equal.

- Does the new technology duplicate something you already

have? If you manage the facilities group and want a full-featured CAD system to draw office layouts, check to see if another group (such as the engineering or design department) already has installed a full-featured CAD system. You may save money by adding your purchase to their existing software licence, and you will also receive the benefit of their expertise and experience as you learn to use the CAD program.

4. Forgive me if I'm hardheaded about my technical standards. There are usually good reasons.

A client recently asked how much it would cost to connect a new

type of workstation to our network. I calculated the cost in detail and came up with a figure that was several times the cost of the workstation itself. He didn't like my answer and probed me for the details. The line items on my cost calculation included costs for:

- Placing a different kind of port in our network hub.
- Licensing a new communications protocol for our network routers and servers.
- Licensing support for a new file system on a mix of servers.
- Retrofitting our backup software to support the file system for his workstation.

He wisely decided not to go ahead.

Sometimes the cost of going in a nonstandard direction is not so obvious up front. One company standardised on a particular word processor and put considerable effort into building standard libraries of fonts, macros, and printer definitions that enabled employees to produce documents that could be shared company wide. When the word processor vendor was slow in releasing a Windows version, the legal department decided to switch to a competing product. The move proved costly: A group of typists trained in both word processors now must convert documents being routed into and out of the legal department.

5. Support my efforts to be proactive.

"Let it break." I once received this strange order from my boss. We had campaigned unsuccessfully to get the authority to automatically delete old messages from our e-mail system. The message file was steadily increasing in size, and in a few months it would grow to exceed our server's disk space. Requests for voluntary co-operation had gone largely unheeded. "Let the disk fill, and let the system break," he said sadly. "Then people will be ready to listen."

No network manager should have to resort to this.

Instead, he or she should be empowered to manage the network in the same way a captain navigates a cruise ship. No sea captain runs

A day in the life of a network manager

7:30am to 9am As usual, start by checking servers, network segments, and other devices that have been unattended overnight and confirming that last evening's backups were successful. Today one of the disk volumes on the accounting server is full. I notify the computing manager in accounting. She discovers that an overnight report had run amok.

9am to 10am Meet with document imaging project team to hammer out server disk space requirements. Bulk scanning of documents starts in 2½ months. Commit to providing 5Gb of storage within the next 60 days.

10am to 11:30am Vendor demonstrates a disk array featuring special error-recovery features and "hot-swappable" disks. Array looks like a good candidate for disk storage required by document imaging project. Vendor reps offer evaluation unit. Promise to get back to them.

11:30am to 12 noon Grab a quick lunch with my boss in the company cafeteria. We discuss the disk array, the document imaging project, and the budget. He promises to okay the requisition for the evaluation system.

12noon to 3pm Retreat to the server room to complete the installation of a new optical jukebox. Interrupted by a report of sluggish performance on the engineering department's CAD system. I run some tests that show that the network and CAD server are normal. User says the problem occurs when he sends a drawing to the plotter. Check his workstation and find that his Windows printer configuration is incorrect. Fix that — everything is fine.

4pm to 4:30pm Prepare requisition for the disk array and also print a copy of my budget worksheet.

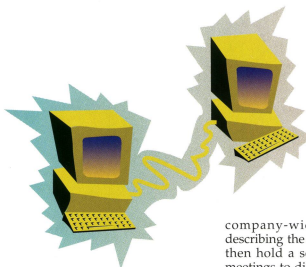
4:30pm to 4:45pm Meet boss and get his signature on the disk array requisition.

4:45pm to 5:30pm Give the network a final stability and performance check and launch the night's backup tapes.

5:30pm to 6:30pm It's the night for the NetWare Users' Group meeting; so grab a fast-food dinner and head over to the meeting.

6:30pm to 8pm The NetWare Users' Group focuses on upgrading to NetWare 4.x, a subject that prompts both enthusiasm and dread.

8:30pm Arrive home (at last).



Some network managers find the stimulation of learning new things almost intoxicating, while others regard change as the enemy of net stability

a ship aground to justify the need to repair the ship's navigational system.

When your net manager predicts trouble ahead, believe it.

6. Help me manage change wisely and efficiently.

Two kinds of people are connected to networks: those who want to use the latest and greatest of everything and those who hate change. As one net manager put it, "My users are happy as long as nothing ever changes or stays the same."

Ironically, network managers themselves seem to fall into these two camps. Some find the stimulation of learning and implementing new things almost intoxicating, while others regard change as the enemy of net stability.

Since changing a major feature of your network might be controversial, it is important to lay the groundwork for a successful shift. Astute network managers follow the same steps as software vendors in paving the way for a new software release.

First, test beta versions of the software among sophisticated users. Those with an insatiable appetite for the latest and greatest are excellent beta test candidates.

Second, unleash a publicity barrage. The press releases, briefings, and demos employed by software vendors each have in-house equivalents. Your net manager can send a

company-wide e-mail message describing the upcoming change and then hold a series of departmental meetings to discuss and demonstrate the major new features the change will provide.

Third, software publishers cushion the changes entailed in a new release by providing tutorials, training videos, conversion utilities, and other tools to help the upgrader. A wise network manager makes similar accommodations for those who are shifting somewhat unwillingly to something new.

If you're not getting this service from your network manager, talk with him or her about receiving more help. In general, your network man-

ager should be willing to talk with you. If you know of shortcomings with your network and have suggestions for making it better, your ideas will more than likely receive an enthusiastic hearing. In some cases, your horizons may broaden as you hear good reasons why a particular idea of yours cannot be implemented. If you are one of the fortunate few whose network is already everything you want it to be, meet your network manager anyway to deliver a well-deserved pat on the back. ■

• *Bill Lawrence is part of a team that manages a 3,000 workstation network for a major utility*

When bad things happen to good networks

When network troubles occur, you can help the net manager fix them quickly by collecting the following data:

- Write down error messages verbatim.
- Be prepared to recount exactly what you were doing when the problem occurred. If possible, see if repeating the same steps causes the same problem.
- How widespread is the problem? Is it limited to your PC or to the PCs in your work group, or has it spread to your entire floor or building?
- Has the problem occurred before, or were there any warnings (such as decreasing performance)?

What do you do if your network is down, your net manager is out of reach, and you didn't plan ahead? If you're sufficiently desperate, you might be able to safely shut down and restart a device that doesn't store data — such as a router or gateway. But you're on thin ice if you're dealing with a device that stores files or performs transactions, such as a file server. If you turn off the device while files or transactions are stored in memory and not yet committed to disk, you could corrupt the data. If you take the chance, be prepared to take the consequences.

When the crisis has passed, review with your network manager how to handle things more elegantly next time.

It's easy being green

Even if you can't afford to update to the latest, energy saving computers, there ARE things you can do to reduce the power bill

A term you will hear more and more about over the next couple of years is "green" or energy efficient computing. All electronic devices consume electricity, but some much more than others. Consider this . . . if you run a bulletin board consisting of a computer, PC and modem, and you leave it running all the time, then it will cost money.

How much? If you assume an average modern system drawing around 300 watts for the PC and monitor (plus a few more watts for the modem) and the electricity rate is just 10c per kilowatt.hour (unit), then the cost will be almost \$300 for the year, or 80c a day.

And if that amount doesn't bother you, then I'll gladly send you my power bill to pay. If the system is older and uses more power, or if the electricity rate in your area is higher, then this could be \$500 per year!

Now most of you don't run bulletin boards, but you do have PCs. If you assume even eight hours a day for just 250 days a year, then at 10c a unit, that's still around \$70 a year.

Energy Star

If there was a way to reduce this cost, would you like to know about it? The US Government has mandated that all US Government PC users and a proportion of all other US PC users will move to a new standard of PC that consumes much less power. Called Energy Star, these devices use a number of techniques to reduce the power they use, especially when they are just sitting around waiting for the user. The German Government has a similar standard and many countries will follow suit.

A modern PC uses around 150 watts and so does the monitor. The Energy Star

standard dictates that they should use less than this, and drop to less than 30 watts of consumption when idle. Monitors such as the new NEC and Samsung models do this, and quite a few of the better brands of PCs comply as well.

The way they do this is to progressively shut down subsystems until they are barely ticking over.

For instance, a monitor uses power for the heater in the picture tube, for the control electronics, and for the power that paints the picture on the screen (the drive voltage). Shut off the drive voltage and you immediately save power, though of course the screen goes blank. When the screen is needed again, it immediately comes back on. Likewise the control electronics.

If you turn off the heater in the tube, it goes cold and when the screen needs to come back on it takes a few seconds to warm up. But if you let the heater just "tick over" it will come back within a second or so and still consume little power while idling.

In the PC, the motherboard always consumes power, but by slowing the processor and doing various other tricks, this can be significantly reduced. One part of the system that always uses power is the hard disk, as it continues to spin all the time. Energy saving systems, such as in notebook PCs, turn the hard disk off when it has been idle for a while. Like the screen, it takes a couple of seconds to spin up to speed, but that's a small price to pay for the power saving.

Most other subsystems of the PC don't use much power when they aren't in operation. These include diskette drives, CD-ROM drives, tape drives and so on. The only power is a trickle to the control circuitry.

Catch 22

But wait. If I go out and buy a brand new "green" (as in environment-friendly, not monochrome or mouldy) monitor or PC or both, it's going to cost me money. In fact, it will probably cost me a fair bit more to upgrade than I'll ever save in electricity. No, obviously while most of us will be buying green computers in the future, our current ones will have to do for the while.

So is there a way of saving money with our current machines? You betcha! With our example of the BBS shown above, it would be quite easy to reduce power consumption (\$\$\$'s) without much difficulty. How about 60 per cent?

Starting with the PC, here are some thoughts:

- Remove all unnecessary cards from the system. That old fax modem you leave in there does use a bit of power, so get rid of it.
- Remove unnecessary diskette drives. A minute saving, but it all adds up.
- Invent a system that will turn the hard disk off when not being used. I'm sure this must exist so I'm trusting you suppliers to let us know.
- Disconnect the fan. This might seem drastic, but the system may well be quite happy without it.

You could go to extremes and disconnect all the indicator lamps from the front panel, and especially the silly "Megahertz" display. But I really don't think it's necessary.

As for the monitor, there's really only one way, and that's to turn it off when you aren't using it. If you are running a BBS, then you hardly need the monitor on except when you're doing the system housekeeping. There is one disadvantage to this — unlike the "green" monitors that shut down gradually, turning a monitor (or just about any electrical device) on and off will shorten its life. In fact, most devices fail during the shock of turn on.

There is one advantage in this procedure. Most monitors have a de-gaussing coil which only operates when the monitor is turned on from cold. It demagnetises the system so those odd purple patches on the screen disappear. Monitors that are left on all the time get quite discoloured after a while.

Screen savers?

"But Wait!" you cry. "What about screen savers?"

Sorry to shatter your illusions, but they are meant to save the screen from having a constantly displayed image burn into the phosphor so it always appears like the "ghost of Christmas Past" on everything the screen ever shows again. But unfortunately, whether they show a picture of Elle in a swimsuit or completely blank the screen, they have negligible effect on the power consumption.

The only way to do this automatically would be to have a device that does it for you, just like the Energy Star screens. These use the VESA (Video Electronics Standards Association) standards which list numerous

ways to detect when a screen can be shut down. For instance, if the VESA graphics card decides it's time to shut down, then it might shut off the RGB signals going to the monitor, which in turn decides it's time for a siesta. Our custom-made device would sit on the VGA cable and detect the same thing, then use a relay or circuitry to turn the monitor off or on, just like hitting the power switch. Pretty brutal, but one way of forcing the issue.

In some ways this is all academic, because both screens and PCs of the future will probably only draw a few watts even when running at full tilt. But that's then, not now. For your own situation, you may be able to use some of the above suggestions, but here are some others:

- Only have the computer on when you need it. In the office, don't start it until you've got the morning coffee and mail out of the way.
- Turn the machine off during lunch or meetings, and certainly when you go home at night.
- Don't automatically turn accessories on with the PC. If you aren't going to be using the laser printer for a while, leave it off. Lasers use more power than PCs.
- If you have a choice of desktop or notebook, remember that the notebook uses a fraction of the power (but costs a lot more to buy).

Why bother?

Long before now you may have wondered why we'd even bother to save power. After all, it's only money. The trouble is, to generate electricity in Australia means burning coal at a distant power station, and that means pumping extra carbon dioxide into the atmosphere.

And even those devotees of the bicycle-powered PC will be generating their own CO₂ in the process (though I hope not so much of the CH₄ — especially in the office!).

So far we've only covered PCs and ancillary equipment. There are many other ways to save power. In the office you can consider leaving the photocopier off when not in use. It consumes a lot of power. Don't air-condition empty rooms (and don't light them either). Don't leave anything unnecessary running at night or over the weekend — especially lights!

At home, consider using the new energy saving light bulbs. Shoot people who leave lights on all night or in empty parts of the house. All sleep in the one bed and shower together to save heating and hot water. (Never thought I'd read that one in a magazine like *PC World*!). Stop using the TV as a friend — don't automatically turn it on as soon as you walk in the front door. Better stop here, I'm getting far too philosophical for safety.

You get the message. You can save power (and dollars) if you try. In a future issue we'll talk about software and other hardware ways to save even more.

Paul Zucker

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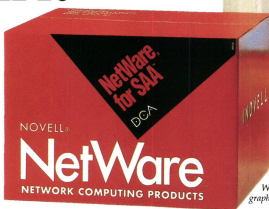
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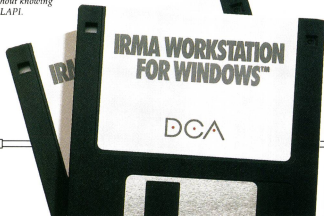
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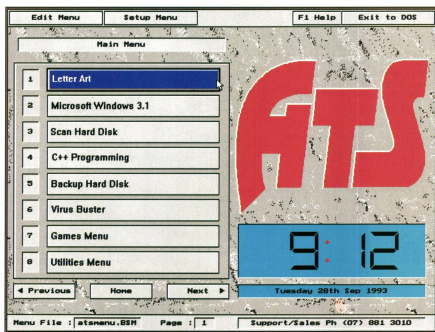


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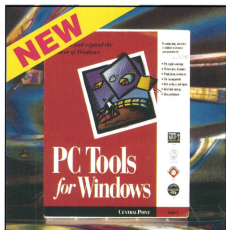
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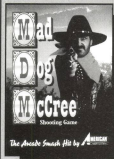


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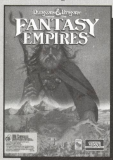
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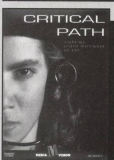
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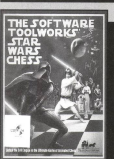
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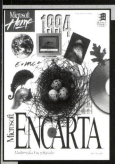


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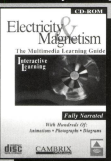
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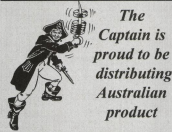


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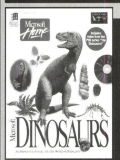
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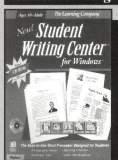
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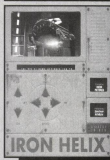
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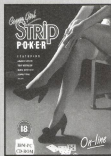
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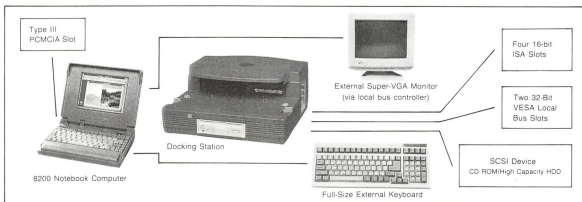
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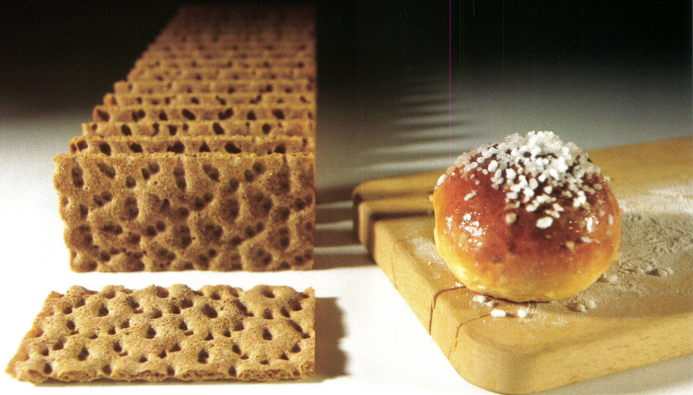
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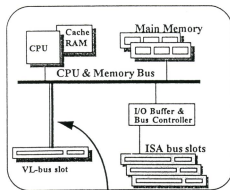
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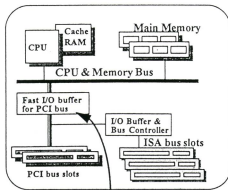
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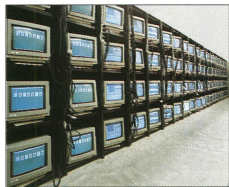
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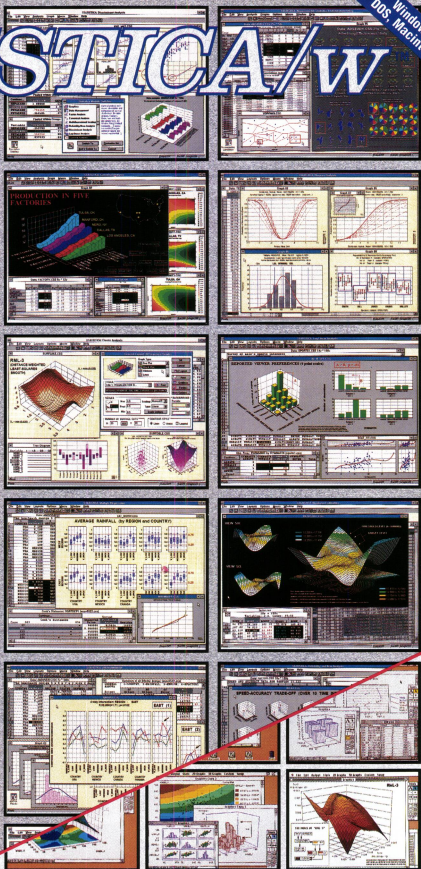
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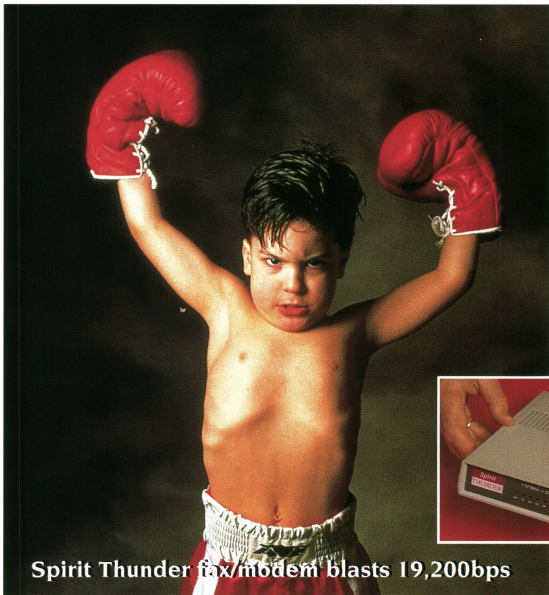
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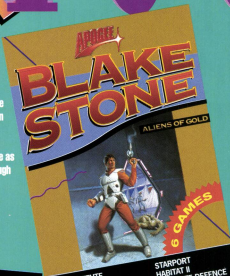
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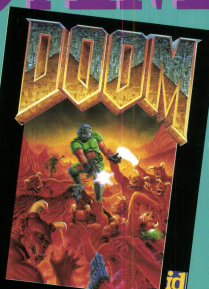
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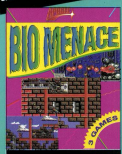
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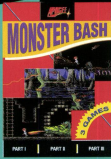
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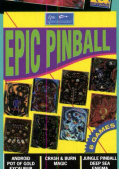
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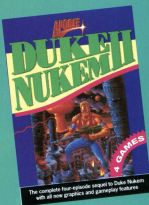
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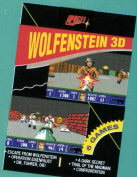
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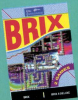
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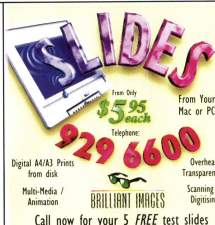
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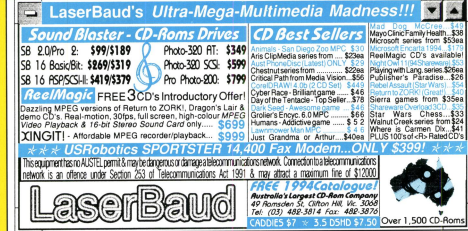
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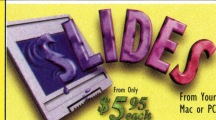
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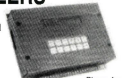
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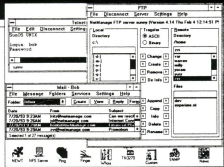
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The screenshot shows the SurveyZ V3 software interface. It features a 'Table Gen' window with a grid for data entry. The grid has columns for 'House Type', 'Type', 'Min', 'Max', 'Null', and 'Status'. The rows are labeled 'House Type', 'Land Area', 'Bedrooms', 'Bathrooms', 'Value', and 'Location'. The 'House Type' row is highlighted. Below the grid, there are sections for 'Table List', 'House Type', 'House Type & Location', 'House Type & Location', 'House Type & Location', and 'House Type & Location'. There are also buttons for 'New', 'Make', and 'Print'.

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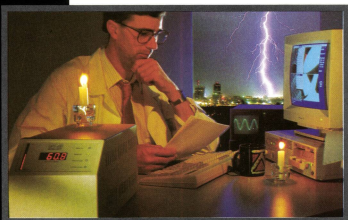
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Keeping track of goals

Managing goals is the aim of two recent programs: both Australian, both shareware, and both Windows-based. While Goal Setter, from Goldmine Systems, can help manage your personal goals, you'll need Footy Files '94 to keep track of Gary Ablett's (for the AFL-impaired, Geelong's goal scorer/deity). And for DOS-users, another Australian program released recently, FileIt, is a random access database that can keep track of just about anything, goals included, so let's kick on.

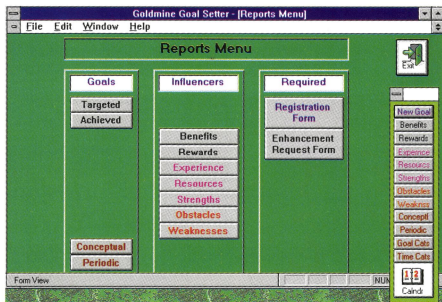
Goal Setter

Goal Setter's purpose is to "help goal setters manage their goals more easily and more fully". If that sounds like you, then you'll be pleased to know that the program is well-designed and makes good use of the Windows environment. Goal Setter has its own setup program in the same mould as Windows' setup program, making it a simple affair to get the program up and running. The system is actually a relational database comprising some 130 screens with various reporting facilities and import/export capabilities.

Unicom 3.1

The registered version of Unicom 3.1, reviewed in February, is available from Data Graphics in the US. Postal address:

PO Box 58517, Renton
WA 98058, USA
Fax: (206) 432 8673
Ph: (206) 432 1201



Goal Setter lets you record details such as the benefits of each goal, obstacles, strengths and weaknesses

The main screen consists of a series of fields which you fill in with your personal goals, as well as information such as the target date, priority, or whether the goal has been achieved.

Around these fields are various buttons for administrative functions, showing the history of your goals, or producing reports, and there is a toolbox for entering data and managing each goal. Double-clicking on a goal will take you to more specific information, and you can also find related goals that are linked with it.

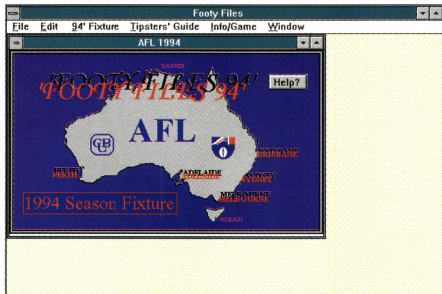
With goals in place, you can also record such details as the benefits of each goal, obstacles, resources available, strengths, weaknesses, and

so on. If your goal is to spend less time at the computer, a computer-based goal setter might not be advisable, but the product is well presented and comes at an affordable and fair price: \$10 for low income earners, \$30 for middle income earners and \$50 for high income earners.

For more information contact Brian Clack of Goldmine Systems on (06) 292 6607 or CompuServe Id 100240,2010.

Footy Files '94

Yes punters, back by popular demand is Bob Jones' Footy Files, which outlines the weekly rounds of the 1994 AFL or NSW Rugby League seasons — depending on your orien-



Footy Files gives an outline of the 1994 AFL or Rugby League season

tation. As well as the weekly fixtures, the program will display the representative fixtures, past performances in both statistical and graphical format, and each club's statistics.

There is also a multi-window file editor where you can enter your own information, such as details of the office tipping competition, and a game of Match-Em!! for those, ahem, quieter moments. The 1994 version has also been "spruced up" by using the Borland Dynamic Link Library.

The program costs \$35, which entitles you to the 1995 draw when available and you should contact the author directly c/o Jonesware, 3 Springvale Ave, Frenchs Forest, NSW 2086.

Fileit

Finally, if you like to create your own databases of information, whether it's your own personal goals, Gary Ablett's, or your favourite poems, Fileit is a simple to use database from shareware author Brian Rondel.

Fileit is a DOS-based program that doesn't require you to be a whizz on databases — just simply add the data and the program stores it.

There is one main screen which is divided into two parts: a list of records down the left-hand side (for example, an address file or inventory) that acts as an index, and a larger space where the corresponding data appears on the right. Above this screen is the main menubar, which allows you to open files, add or delete records, and print or edit information.

There are also easy to use search facilities and an on-line help system. To navigate the database you simply select the record and its information will appear in the large section of the screen, from where you can edit, print, and so on. You can store up to 2,500 characters, approximately two to three screens of information, for each record.

Fileit also has support for a mouse and dot matrix or laser printer. If you're after a simple database program, Fileit is available from the distributor Ark Angles. Phone (047) 58 81 00 for more information.

— Geoff Long

• Correspondence on shareware, free-ware, and public domain programs can be sent to Geoff Long c/o Australian PC World or by e-mail to glong@peg.pegasus.oz.au

Shared views

To: glong@peg.pegasus.oz.au

In reference to your article in *Australian PC World* dated Dec/Jan 94, I think unregistered shareware should give users "fair use" but not necessarily be the full version. I found one such example though in a commercial product, a desktop publishing program running under SCO Unix Open Desktop, whereby the program lets you test every available option with the exception of saving and printing documents. I would consider these two features quite important in the program and enough incentive to purchase the full version. Another commercial package I've come across makes the "limited" version program available free of charge and includes an expiry date built into the executables rendering it useless after 30 days. This is rather drastic but effective.

Regards,
Naasif Gierdien
St Leonards, NSW

G.L. — I agree, unregistered shareware need not necessarily be the full version. The first method, however — disabling printing — sounds the more drastic, though less effective, given that one of the main things you'd like to see from a DTP program is the final printout. In a shareware program, disabling the printing might actually mean a disincentive to purchase the full version.

Similarly, a 30-day expiry would preclude you from passing on the program to a friend, which can be one of the best ways of sourcing shareware.

Large and flightless

By now you will all be experts on Apple's new PowerMac computers. This is the machine designed to unify the disparate worlds of Mac and PC users, run any operating system known to man and probably be beatified by the pope.

Thousands of Australian computer journalists (only the numbers have been changed to protect the innocent) gathered in mid February to be shown the new machines. Much was made of the capabilities of the new machines to replace PCs, but just how good are they? They use blindingly fast Motorola RISC processors that aren't natively compatible with existing Mac software, let alone DOS or Windows software. To run any of these the machine needs to EMULATE (named after large, flightless birds). Yes, to run Mac software, the new machines have emulation code built into ROM, and this slows the new machines to the same speed as existing Macs!

Soft and squishy

PowerMac bundles are being sold with SoftWindows, a product that again emulates an Intel computer to run DOS and Windows. The superfast new machines again slow considerably when doing this . . . but wait. You need 16Mb of RAM to run anything! And even then, it only runs Windows in STANDARD mode! When asked about benchmark speeds for running Windows emulation, Apple replied that . . . wait for it . . . "The Windows benchmark software hasn't been re-written yet!" If this machine is so compatible, why does normal Windows software have to be re-written to run on it?

Knit one, purl two

The biggest money maker in 1994 is paid support. Right? Maybe not. When Microsoft launched the scheme in Australia last year, it predicted a growth industry in third party support companies offering alternative support. Well we can only hope that they are doing better than Microsoft. Now that people have to pay for anything other

than help with set-up or bugs, the phones have gone strangely silent. At the support coalface, where staff used to take dozens of calls a day, they now average just a couple. Knitting is now a favourite pastime.

When we say the phones are quiet, that isn't quite true, as thousands of troubled users still ring in but are headed off at the first line of defence — George the talking clock. However, we are informed (and once again, don't say we told you this) that no-one who yells and complains loudly enough is ever refused free support! Mind you, we did hear from one reader who tried to install Windows and it crashed. She tried to install it again and it crashed. She rang technical support and was told she must pay for help as "this is a re-install problem so isn't free!"

'He only owned the parrot at the bottom of the cage. The rest were on higher perches!'

Into the Iron Age

IBM makes computers. IBM employees use computers. IBM employees have computers. BUT . . . do they get computers to use at work? Not always. Backbytes has learned of an IBM person of the X gender who is charged with assisting the company's public relations company. A typical PC user, yes, but a pity she can't get issued with one at work and has to take work home to do on her private PC.

Look mom, no hands

Osborne launched its "keyboardless" PC recently. The machine uses IBM's new speech recognition software to accept spoken text input for applications such as professionals who want to dictate letters straight to PC files without learning to touch a keyboard. IBM Australia insiders saw Osborne's package and said "That's our soft-

ware. We make PCs. Why aren't we selling a bundle like that? DO IT!"

And so the \$4,000 PS Valuepoint system with speech recognition was born. What a bargain. Well, it was up until the calls started to come back in from the purchasers. "OK, you've sent me the PC and the software. Now how do I get it to work?"

Exit stage left, then return with red face, carrying OS/2 operating system and extra 12Mb of memory needed to run the software. Oops! I think we lost money on THOSE machines boys.

They got dunded — again

Osborne also announced it is selling NCR servers now. NCR announced it is now called AT&T. AT&T didn't really feel like announcing what some of its US employees had been getting up to. One department has recently had 30 to 40 per cent of its staff redundancy (they say if a word appears three times in print the Macquarie dictionary will adopt it too) because of poor profitability. Could that have something to do with the claim that some of the staff had been leasing AT&T computers and pocketing the money — over US\$40 million.

High speed trouble

Dennis Hayes, after whom the famous modem command set was named, was in town last month. His visit reminded us of the bad old days when many US modems simply weren't approved for use in Australia, and using them was considered very naughty. Amongst bulletin board system operators (sysops) a favourite was the US Robotics modem that was very, very fast . . . and very, very illegal to use. Still, what Austel doesn't know won't hurt Austel, will it? These modems used a particular protocol called HST and the sysops made it known that they had HST compatibility. Austel simply looked at one board and found the list of other boards that offered HST. Result: lots of phone calls to sysops saying "We'll be around next week to check. We won't find any illegal modems, will we?" ■

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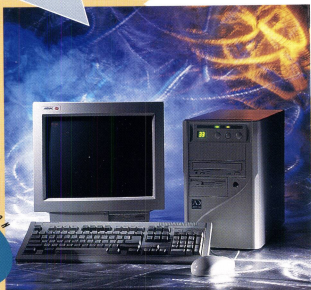
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